DOCUMENT RESUME

ED 249 387 CE 039 837

AUTHOR	Keeton, Martha; And Others
TITLE	Manufacturing Exploration. Practical Arts. Instructor's Manual. Competency-Based Education.
INSTITUTION	Kentucky State Dept. of Education, Frankfort.
PUB DATE	83
NOTE	139p.
AVAILABLE FROM	Kentucky State Department of Education, Director for Curriculum Development, 2024 Capital Plaza Tower, Frankfort, KY 40601. (A slide-tape presentation is available to accompany this document.)
PUB TYPE	Guides - Classroom Use - Guides (For Teachers) (052)
EDRS PRICE	MF01/PC06 Plus Postage.
DESCRIPTORS	Administrators; Behavioral Objectives; Career Education; *Career Exploration; *Competency Based Education; Course Descriptions; Industrial Arts; Junior High Schools; Learning Activities; Machine Tool Operators; Machine Tools; *Manufacturing; Manufacturing Industry; *Practical Arts; Productivity; Research and Development; Secondary Education; State Curriculum Guides; Student Evaluation; Teaching Guides; *Trade and Industrial Education; Vocational Education
IDENTIFIERS	Kentucky; Special Needs Students

ABSTRACT

This manual provides curriculum materials for implementing a career exploration class in manufacturing occupations within a Practical Arts Education program for middle/junior high school students. Introductory materials include the program master sequence, a list of manufacturing occupations, an overview of the competency-based instructional system for practical arts, and narration for a slide-tape presentation. The instructor's guide to the learning activities contains guide sheets for each task assignment sheet; these guide sheets present objectives, attitudes and values to be developed, checkout activities, recommended references and audiovisuals, notes and suggestions for instruction, and references and necessary tools and equipment. Master copies of learning activities are included. Appendixes include a vocabulary listing, a list of practical arts videotapes, a list of references appropriate for career exploration, and ideas for addressing students with special needs. The 11 student task assignment sheets are also included. Each contains the following components: an introduction, objectives, learning activities, checkout activities, vocabulary, instruction sheets, and a copy of the instructor's final checklist. Tasks are provided for five families of manufacturing occupations: industrial processes, materials, production, research and development, and management. (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED249387
CE039837
KY8313306

Instructor's Manual

Practical Arts

MANUFACTURING EXPLORATION

Competency - Based Education

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

L Davis

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

1983
Kentucky Department of Education

PRACTICAL ARTS

Manufacturing Exploration

Directed By

Martha Keeton, Curriculum Specialist
Division of Materials and Curriculum
Office of Research and Planning

Doug McKinley, Director
Practical Arts Education Unit
Bureau of Vocational Education

Robert Puttoff, Program consultant
Industrial Education Unit
Bureau of Vocational Education

1983

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
PROGRAM MASTER SEQUENCE	iv
MANUFACTURING OCCUPATIONS	v
OVERVIEW OF THE CBVE INSTRUCTION SYSTEM FOR PRACTICAL ARTS	vi
Overview of Program	vi
Competency Based Vocational Education	vi
Using the Instructor's Manual	vii
SLIDE-TAPE NARRATION	1
INSTRUCTOR'S GUIDE TO LEARNING ACTIVITIES	9
APPENDIX	79
Vocabulary Listing	81
Practical Arts Videotapes	82
References Appropriate for Career Exploration	84
Addressing Students with Special Needs	85

[Student Task Assignment Sheets]

ACKNOWLEDGEMENTS

This Practical Arts Curriculum is the result of the efforts of a number of people.

The teacher who assisted in the writing of the materials and who developed the slide-tape presentation was:

Charles Turner
Caverna High School
Horse Cave, KY

The supporting staff who assisted in the development of the materials were:

Technical Editors: Robert Puttoff, Bill Whalen
Editors: Suzanne Patterson, Bobby Crosswhite
Media Specialist: Tom Vantreese
Tape Narration Coordinator: Merle Insko
Tape Narrator: Sheila Potter
Artist: Mimi Hackney
Typists: Renita Van, Sheila Warren

PROGRAM MASTER SEQUENCE
PRACTICAL ARTS

Manufacturing Exploration

CODE NUMBER		MODULE STOCK NUMBER	SLIDE STOCK NUMBER	TAPE STOCK NUMBER
PA-MA-0	Overview of Manufacturing Occupations	*	6-215	6-216
	INDUSTRIAL PROCESSES FAMILY			
PA-MA-1	Using Measuring and Layout Tools	6-217	*	*
PA-MA-2	Using Woodworking and Hand Tools	6-218	*	*
	MATERIALS FAMILY			
PA-MA-3	Defining the Basic Elements and Principles of Design	6-219	*	*
PA-MA-4	Designing a Plastic Product	6-220	*	*
	PRODUCTION FAMILY			
PA-MA-5	Developing a Production Flow Chart	6-221	*	*
PA-MA-6	Mass Producing a Product	6-222	*	*
	RESEARCH AND DEVELOPMENT FAMILY			
PA-MA-7	Conducting a Market Survey	6-223	*	*
	MANAGEMENT FAMILY			
PA-MA-8	Composing a Company Name and Designing a Trademark	6-224	*	*
PA-MA-9	Defining Major types of Company Ownerships	6-225	*	*
PA-MA-10	Explaining Functions of Industrial Relations Personnel	6-226	*	*

MANUFACTURING OCCUPATIONS

Management Job Family

Plant Manager
Production Manager
Personnel Manager
Systems Controller
Retirement Counselor
Labor Consultant

Materials Job Family

Plastic - Seasoner Operator
Plastics Spreading Machine Operator
Furnace Operator
Steel Pourer
Glass Blower
Brick and Tile Making Machine Operator
Foam Rubber Curer
Caster
Kiln Operator
Tanning Drum Operator

Processes Job Family

Millwright
Machine Operator
Welder
Molder
Refiner

Production

Production Engineer
Quality Controller
Assembler
Painter
Finisher

Research and Development Job Family

Research Analyst
Designer
Patternmaker

OVERVIEW OF THE CBVE INSTRUCTIONAL SYSTEM FOR PRACTICAL ARTS

Overview of Program

The purpose of the Practical Arts Education program is to broaden the experiences of middle/junior high school students by providing them with an opportunity to become oriented to the world of work and explore a diversity of career goals in order that they may be better prepared to make decisions on their personal needs and future goals. The Practical Arts program consists of a series of career exploration classes based on the occupational clusters spread over a two-year period. A cruise through each occupational cluster shall include the implementation of three behavioral components or domains.

(A) Cognitive: Students shall survey or cruise the content of the occupational cluster. This survey should include the scope, levels, working conditions, entry requirements, duties performed, opportunities, and related jobs in the occupational cluster.

(B) Psychomotor: Students shall have in each cluster experiences of tasks that will be the same as or similar to those who work in the occupational cluster. These experiences or tasks shall be action oriented, vary with the students' interests, aptitudes, and abilities, and be at various levels of employment within a cluster.

(C) Affective: Students shall receive guidance and the opportunity to systematically apply those knowledges and experiences within the cluster to his/her own interest and abilities, his/her present and future choices, and future occupational decisions and experiences.

The competency-based vocational education curriculum is specifically directed at the psychomotor, activities, experience, or tasks aspect of the Practical Arts program. Teachers are encouraged to augment their lesson plans with cognitive information about the occupational clusters from other sources. The curriuclum here will help specifically in the psychomotor aspect of the program.

Competency-Based Vocational Education

The purpose of this manual is to aid the instructor in implementing a competency-based instructional program. It is intended as a guide and resource for the teacher using CBVE materials. The materials in any occupational area have several common elements, particularly their purpose and their format, which will be discussed later.

Regardless of the delivery system used to implement it, CBVE is based on the concept of competencies. That is to say, it is an instructional system in which: (1) the competencies for specific occupations are built around tasks validated by incumbent workers; (2) instruction is designed around performance objectives based on the worker tasks; (3) students are held accountable for meeting the specified minimum standards of performance required for entry-level jobs.

These instructional materials have been developed by Kentucky teachers. They have attempted to provide relevant learning activities and performance objectives which include: (1) the skills (or tasks) which the student must learn; (2) the conditions under which the student must perform; and (3) the standard or level of achievement to which the student must perform.

The purpose of the Curriculum Unit (CBVE) is to develop and assist the implementation of competency-based instructional materials. The Unit is located at:

1910 Capital Plaza Tower
Frankfort, KY 40601

To facilitate the implementation of CBVE materials, a person has been identified in each vocational region as a CBVE Contact Person. Please address any problems or concerns about your CBVE program to your Regional Contact Person.

By the time you receive your CBVE materials, you should have attended a workshop for teachers implementing CBVE materials. The Inservice Education modules, which were distributed at the workshop, are your greatest source of suggestions for setting up and managing a CBVE program. For more detailed information, consult your inservice modules or your Regional Contact Person.

Using the Instructor's Manual

This Instructor's Manual is divided into two sections: introductory materials and Instructor's Guide to Learning Activities. The introductory materials include, among other things, the Program Master Sequence. It contains a listing of the task assignment sheet and slide/tape titles, code numbers, and stock numbers.

You can use the Program Master Sequence as a quick reference guide to the contents of the instructional program, as well as a checklist for insuring that all materials have been received. The code numbers and stock numbers serve as a guide to ordering additional materials.

The Instructor's Guide to Learning Activities is the heart of this manual, because it contains a brief listing of the contents of each task assignment sheet with suggestions for its use. It is suggested that you insert the corresponding task assignment sheet behind the Guide Sheets so you will have the complete program in one place.

Format is consistent throughout all CBVE programs in that the materials contain the same basic components:

Introduction - tells the student what he/she will learn and why it is important.

Objective - clearly states what the student is expected to know or do, under what conditions, and how well.

Learning Activities - a "road map" for the student to follow in going through the task assignment sheets; list the various activities the student will perform in learning the task.

Instructor's Final Checklist - tells the student and the instructor exactly what the student will be evaluated on in the check-out activity; the instructor uses this sheet to rate the student's performance.

Check-Out Activities - tells the student what he/she will be asked to do for the final test or performance.

The Instructor's Guide Sheets in this manual present the essential information in capsule form. In addition, they list: the recommended references and audio-visuals; attitudes and values to be developed; notes and suggestions for instruction; alternate activities for students; necessary tools and equipment; and space for teacher's notes.

The task assignment sheets are designed to be left intact. Students should be reminded not to write on any of the pages. In some cases, they will be required to obtain duplicates or sheets like the ones shown. These are often student self-checks. They can be filed in a folder and can be obtained as needed.

The Instructor's Final Checklist is another page that should not be written on. It should remain in the task assignment sheet although you may want to make additional copies of it to place in students' folders.

SLIDE-TAPE NARRATION

Slide-Tape Narration for Manufacturing Occupations

Slide 1: Overview of Manufacturing Occupations.

Slide 2: Modern manufacturing is very different from manufacturing of long ago. There was a time when each family made or grew everything that was needed to live and survive. It took a long time to make each item, and often the necessary materials were not available.

Slide 3: As people progressed, they began to specialize in a one-of-a-kind product. Some people baked bread; others made shoes; others made pots and pans; and others made tools used for farming.

Slide 4: As time passed, people began to trade these goods and products for items needed by their families. This resulted in our manufacturing process.

Slide 5: What is manufacturing? Manufacturing is the process of making products, using tools and materials of industry, to meet people's needs and wants.

Slide 6: As people's basic needs--food, clothing, and shelter--increased, their wants also increased. There was a demand for more and more products.

At first, products were constructed individually. Replacement parts were not readily available. Therefore, there was a need for interchangeable parts, parts that could be used in place of each other. The gun was one of the first products to be made with interchangeable parts.

Slide 7: Manufacturing, as we know it today, actually began with Henry Ford's assembly line in 1914. He manufactured the Model T Ford car.

Slide 8: Manufacturing industries employ over 21 million people. There are thousands of different jobs found in manufacturing. The main job classifications are: skilled, unskilled, semi-skilled, technical, and professional.

Slide 9: Jobs for unskilled workers generally require very little education. Little on-the-job training is required for this level. Typical jobs include unloading trucks,

Slide 10: general repair work,

Slide 11: and cutting the grass.

Slide 12: Jobs for semi-skilled workers require some skill and education. Only a short period of on-the-job training is required and usually takes six months or less. A fork lift operator is an example of a semi-skilled job.

Slide 13: Skilled workers make up the largest part of the manufacturing industry. Most of these workers receive special training through apprenticeship programs. Examples of skilled jobs are machinists,

Slide 14: welders,

Slide 15: and mechanics.

Slide 16: Technical jobs usually require a college degree. Technical workers are specialists in their field. Technicians must have working knowledge of the total industry in which they work. Examples of technical workers are drafters

Slide 17: and metallurgists.

Slide 18: Professional people in manufacturing usually have a college education. Their duties are planning, organizing, and controlling the manufacturing company. Here is a company president.

Slide 19: The jobs in the manufacturing cluster may be divided into five groups or job families. The first job family is "materials." Manufacturing industries have many different types of materials to use in manufacturing a product. Some examples are wood,

Slide 20: metal,

Slide 21: and plastics.

Slide 22: Wood is a natural material that is obtained from trees and is used to make useful products.

Slide 23: It is easily worked with hand tools and machines.

Slide 24: Wood is pleasing to the eye and warm to the touch. It can be made into many useful products.

Slide 25: Metal is a material that is very strong and durable.

Slide 26: Metal does not come from the earth in a useable form. Steel, for example, is made in a blast furnace by combining different materials.

Slide 27: Examples of steel products are construction equipment

Slide 28: and farm equipment.

Slide 29: Plastics are man-made materials used in manufactured products.

Slide 30: They are cheap to manufacture and easily formed into shape; lightweight, but yet strong.

Slide 31: Plastics are hard and often unbreakable; therefore, they are very desirable for producing tools. Because plastics are made from chemicals, they are becoming one of the single most important materials used in manufacturing.

Slide 32: The second job family is "industrial processes."

Slide 33: Basically all parts of manufactured products are made by processing materials. Processing means changing materials into something useful. To perform these processes, tools are needed.

Slide 34: Simple tools were the first things invented to help satisfy the need for food, clothing, and shelter.

A tool is a device that helps people work. Tools used in manufacturing vary according to their use and function.

Slide 35: Today, tools may be classified as one of the following: Hand tools,

Slide 36: portable power tools,

Slide 37: machine tools,

Slide 38: and heavy industrial equipment.

Slide 39: Examples of processes that change the form and shape of materials into products are:

Slide 40: sawing,

Slide 41: drilling,

Slide 42: and welding.

Slide 43: "Production" is the third job family. There are three major types of production systems. One is custom production. One or several people work on one product at a time. They do all the processes until it is finished.

This type of production is used when only one certain product is needed. Demand for the product is low and the cost is high.

Slide 44: Job-lot production is used when only a limited number of the same product is needed. Usually a company will take orders for a specific number of the product to be made. When they are finished, a new order for a different product is taken.

Slide 45: Workers in job-lot production must be able to learn new tasks, because jobs change with each new and different product made.

Slide 46: When large quantities of a product are to be made, the line production system of manufacturing is used.

Slide 47: People are assigned to single operations or jobs. The parts of the product are moved along a conveyor belt system around the factory.

Once the production operation begins, each worker does one job operation over and over. This often allows the worker to specialize in one particular job or task.

Slide 48: No matter which type of production a manufacturing company uses, the operations and techniques of construction must be well planned.

Slide 49: One of the biggest challenges in manufacturing is to plan a system to produce as many good products that are needed in the shortest amount of time. This is known as "research and development," the fourth job family.

Slide 50: Research and development work in manufacturing produces new knowledge, ideas, and techniques to improve the quality of the product made by the company. This metallurgist is operating a hardness tester.

Slide 51: The fifth and final manufacturing job family is "management." The purpose of a manufacturing company is to make a profit by selling the product to the consumer. This is accomplished through good management. A good manager must be able to plan, organize and control.

Slide 52: Manufacturing companies can be operated under one of three types of business organization: proprietorship, partnership, and corporation.

A proprietorship is a business, such as this one, that is owned and operated by one person. This type is the oldest form of ownership. Usually the proprietor puts up the money needed to start and run the business. All the decisions of operating the business are made by the owner, and all the profits go directly to the owner.

Slide 53: A partnership exists when two or more people own a company and share the responsibility for running and operating the business. The partners share the profits.

Slide 54: A corporation is a company that is owned by people called stockholders who buy stock in the company. They receive dividends on their investment.

Slide 55: It is the most common type of ownership and the most complicated to run and operate. About three-fourths of the business in the United States is done through corporations.

Slide 56: To summarize the Manufacturing Cluster, the products we buy and use today are made by the manufacturing process.

Slide 57: Manufacturing has changed from its crude beginning to a highly technical process and is continually changing.

Slide 58: New materials and processes are continually being discovered and developed to provide the best products for the consumer.

Slide 59: Why is manufacturing important to the World of Work?

Slide 60: Why is manufacturing needed?

Slide 61: It is easy to see that the manufacturing industry provides more jobs and career opportunities than any other area in the World of Work.

Slide 62: This concludes this slide-tape presentation on manufacturing occupations.

INSTRUCTOR'S GUIDE TO LEARNING ACTIVITIES

USING MEASURING AND LAYOUT TOOLS

OBJECTIVES

(1) GIVEN a display of the basic layout and measuring tools,

IDENTIFY THE NAME OF EACH TOOL.

YOU SHOULD identify all the tools correctly.

(2) GIVEN basic layout and measuring tools and a list of problems,

USE THE TOOLS TO COMPLETE EACH PROBLEM.

YOU SHOULD complete at least 90% of the problems correctly.

ATTITUDES AND VALUES TO BE DEVELOPED

Students will realize that efficient and wise use of materials require the correct use of layout and measuring tools.

CONTENTS

Instructor's Final Checklist	Learning Activity Number
USING MEASURING AND LAYOUT TOOLS	6

CHECK-OUT ACTIVITIES

(1) Your teacher will provide a display of measuring and layout tools. Write the name of each tool.

(2) Your teacher will provide problems that require using measuring and layout tools. Complete each problem.

SUGGESTED REFERENCES

Fales, Sheets, Mervich, and Dinan, Manufacturing, McKnight Publishing Co., First Edition, 1980.

Groneman and Feirer, General Industrial Education, McGraw-Hill Book Co., Sixth Edition, 1979.

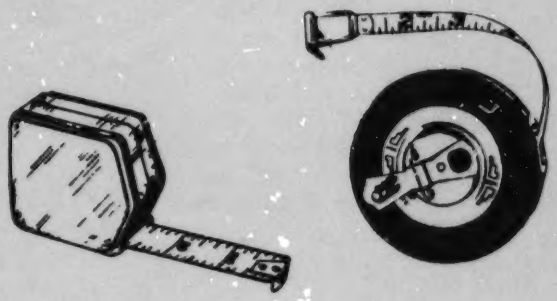
LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have the class read and study carefully the use of each type of layout and measuring tool.	Manufacturing, pp.300-304 General Industrial Education, pp.212-216 (The above are suggested references. You may use other texts you have available.)	
2	Prepare a table display of measuring and layout tools. Explain the name and use of each tool. To reenforce your presentation, you may want to provide copies of the pictures of the tools and have students identify each tool.	Display of measuring and layout tools "Measuring Tools" (Master Copies in this section)	
3	Have the class make posters on layout and measuring tools. Divide the class into small groups.	Shop magazines Poster board Markers	
4	Give a classroom lecture and demonstration on the proper use and care of layout and measuring tools.	Basic layout tools Basic measuring tools Material (stock) necessary for use with the tools.	
5	Let the students practice measuring and laying out material. You may want to set up work stations and assign a small group of students to each station.	Layout tools Measuring tools Pencils Material (stock)	

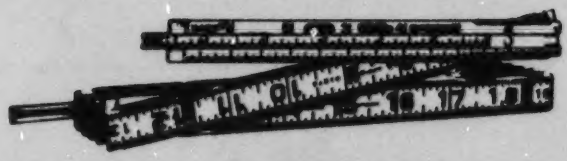
LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
6	Have students check-out on the following: 1. Exhibit each tool and have them write the name. 2. Make a Check-Out Activity II Sheet available to each student. Have him/her complete each problem. Use the Instructor's Final Checklist to evaluate each student's performance.	T-Bevel Center punch Combination square Try square Template Scratch awl Bench Rule Dividers Compass Caliper, outside Marking gage Flexible steel rule Framing square Trammel points Material (stock) Check-Out Activity II Sheet: "Using Layout and Measuring Tools" (Master copy in this section) Instructor's Final Checklist	

Measuring Tools

Combination Square

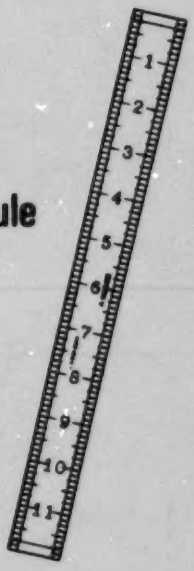
Steel Tapes



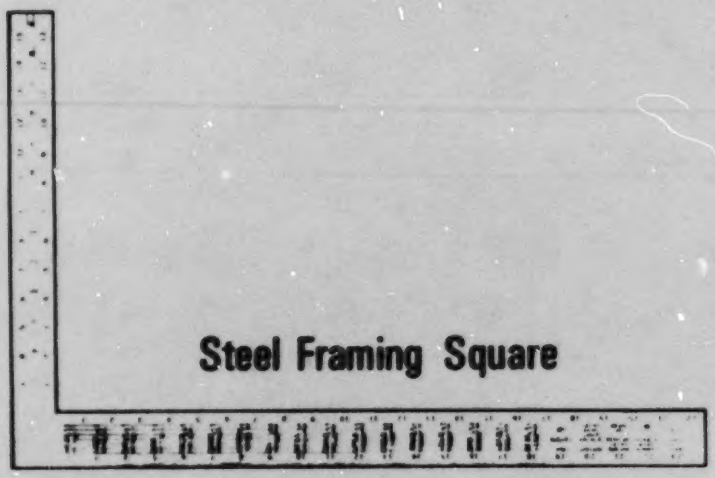


Folding Rule

Bench Rule

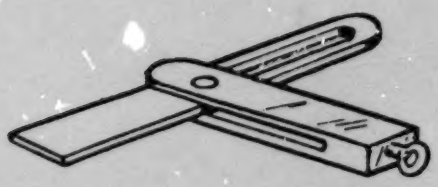


Steel Framing Square



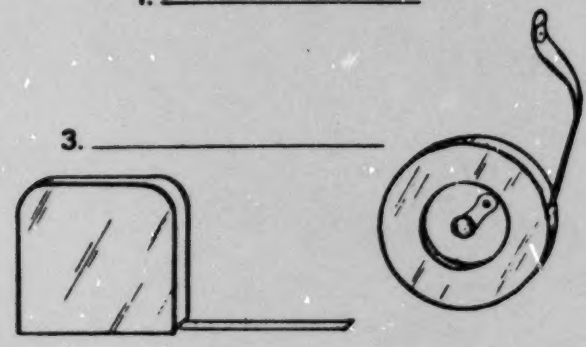
MEASURING TOOLS

Identify the names of the six basic measuring tools.



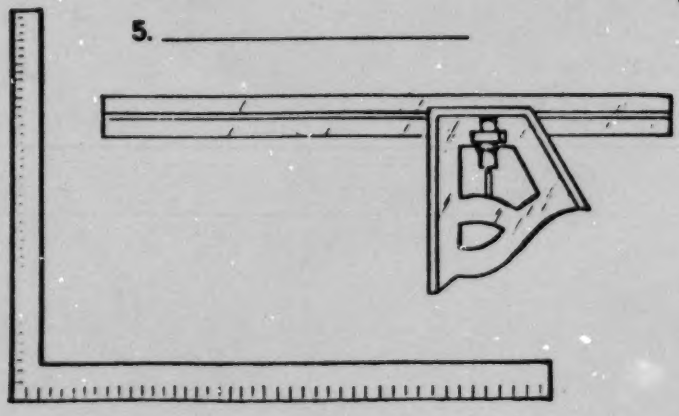
1. _____

2. _____



3. _____

4. _____



5. _____

6. _____

CHECK-OUT ACTIVITY II

USING LAYOUT AND MEASURING TOOLS

Complete the following problems:

1. Use a T-Bevel to layout 30-, 45-, and 60-degree angles on a piece of stock.
2. Locate the center and mark holes for drilling with a center punch.
3. Layout and measure a 45 degree miter with a combination square.
4. Layout and check the squareness of a piece of stock with a try square.
5. Use a template to layout a pattern for the desired shape on a piece of stock.
6. Mark and scribe lines with a scratch awl.
7. Measure stock to the correct length with a bench rule.
8. Divide a piece of stock 12" long into 8 equal parts using the dividers.
9. Layout circles of 4½, 6, and 7 inches in diameter with a compass.
10. Check the diameter of stock using an outside caliper.
11. Use a marking gage to scribe a line parallel to the edge on a piece of stock.
12. Measure stock to the correct length with a flexible steel rule.
13. Layout and measure stock with a framing square.
14. Layout a circle measuring 12 inches in diameter with trammel points.

USING WOODWORKING HAND TOOLS

OBJECTIVES

(1) GIVEN a display of basic woodworking hand tools,

IDENTIFY EACH TOOL.

YOU SHOULD identify all of the tools correctly.

(2) GIVEN basic woodworking hand tools and problems requiring the use of the tools,

USE THE TOOLS TO COMPLETE THE PROBLEMS.

YOU SHOULD complete at least 90% of the problems correctly.

ATTITUDES AND VALUES TO BE DEVELOPED

The students will appreciate and recognize the value of woodworking hand tools and how they can be used to construct useful items from wood.

CONTENTS

Instructor's Final Checklist	Learning Activity Number
USING WOODWORKING HAND TOOLS	6

CHECK-OUT ACTIVITIES

(1) Your teacher will display basic woodworking hand tools. Write the name of each tool.

(2) Your teacher will provide some basic woodworking hand tools and problems requiring the use of the tools. Complete each of the problems.

SUGGESTED REFERENCES

Fales, Sheets, Mervich, and Dinan, Manufacturing, McKnight Publishing Co., First Edition, 1980.

Groneman and Feirer, General Industrial Education, McGraw-Hill Book Co., Sixth Edition, 1979.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have the class read about woodworking hand tools in a reference. Discuss the information.	Manufacturing General Industrial Education	
2	Have students make a list of wood articles at home that required the use of hand tools.		
3	Make a display of the tools. Explain the use of each tool.	Bit Brace Claw hammer Combination square Hand drill Hand plane Mallet Miter box Saws: --Back --Compass --Coping --Dovetail --Hand --Rip Standard screwdriver Wood chisel	
4	Demonstrate the correct and safe operation of each tool. Emphasize observing safety rules for the use of each tool.	Tools listed for Learning Activity 3 Materials for use with the tools	
5	Let students practice using the tools. You may want to set up work stations and have small groups of students rotate from station to station.	Tools and materials listed for Learning Activity 4	

CARING FOR A VEHICLE

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
6	As you display each tool, have each student write the name of the tool. Make the tools, materials, and the problems available to each student. Have each student complete the problems. (NOTE: You may want each of these activities to contribute to the completion of a product.) Use the Instructor's Final Checklist to to evaluate each student's work.	Tools listed in Learning Activity 3 Materials necessary to complete the problems Check-Out Activity Sheet, USING WOODWORKING HAND TOOLS (Master Copy in this section) Instructor's Final Checklist	

CHECK-OUT ACTIVITY II

USING WOODWORKING HAND TOOLS

Use woodworking hand tools to do the following activities:

1. Drive nails with a claw hammer.
2. Cut a board on a 45 degrees angle using the miter box and back saw.
3. Bore a hole with a brace and bit.
4. Tighten screws with a standard screwdriver.
5. Plane a board to the correct size using a hand plane.
6. Cut a surve design witha coping saw.
7. Cut out a notch in a board with a wood chisel and mallet.
8. Drill a hole with a hand drill and bit.
9. Cut an internal design with a compass saw.
10. Mark a board for a 90 degree cut using a combination square.
11. Crosscut a board with a hand saw.
12. Cut a board with the grain using a ripsaw.

DEFINING THE BASIC ELEMENTS AND PRINCIPLES OF DESIGN

OBJECTIVES

(1) GIVEN a test on requirements, elements, and principles of design,

COMPLETE THE TEST.

YOU SHOULD complete the test with 90% accuracy.

(2) GIVEN a ruler, pencil, graph paper, templates, markers, compass, and French curve,

DESIGN A PRODUCT.

YOUR DESIGN should include each of the four basic shapes of lines and all of the elements and principles of good design.

ATTITUDES AND VALUES TO BE DEVELOPED

Students will appreciate a well designed manufactured product.

CONTENTS OF MODULE

Instruction Sheets	Learning Activity Number
I. BASIC SHAPES OF DESIGN	4
II. COLORS	5
III. IMPROVING PRODUCT DESIGN	8
Instructor's Final Checklist	
DEFINING THE BASIC ELEMENTS AND PRINCIPLES OF DESIGN	9

CHECK-OUT ACTIVITIES

(1) Your teacher will provide a test on requirements, elements, and principles of design. Complete the test.

(2) You will be provided the necessary tools and supplies. Design a product.

SUGGESTED REFERENCES

Jambro, Introduction to Manufacturing, Delmar Publishing Co., 1982.

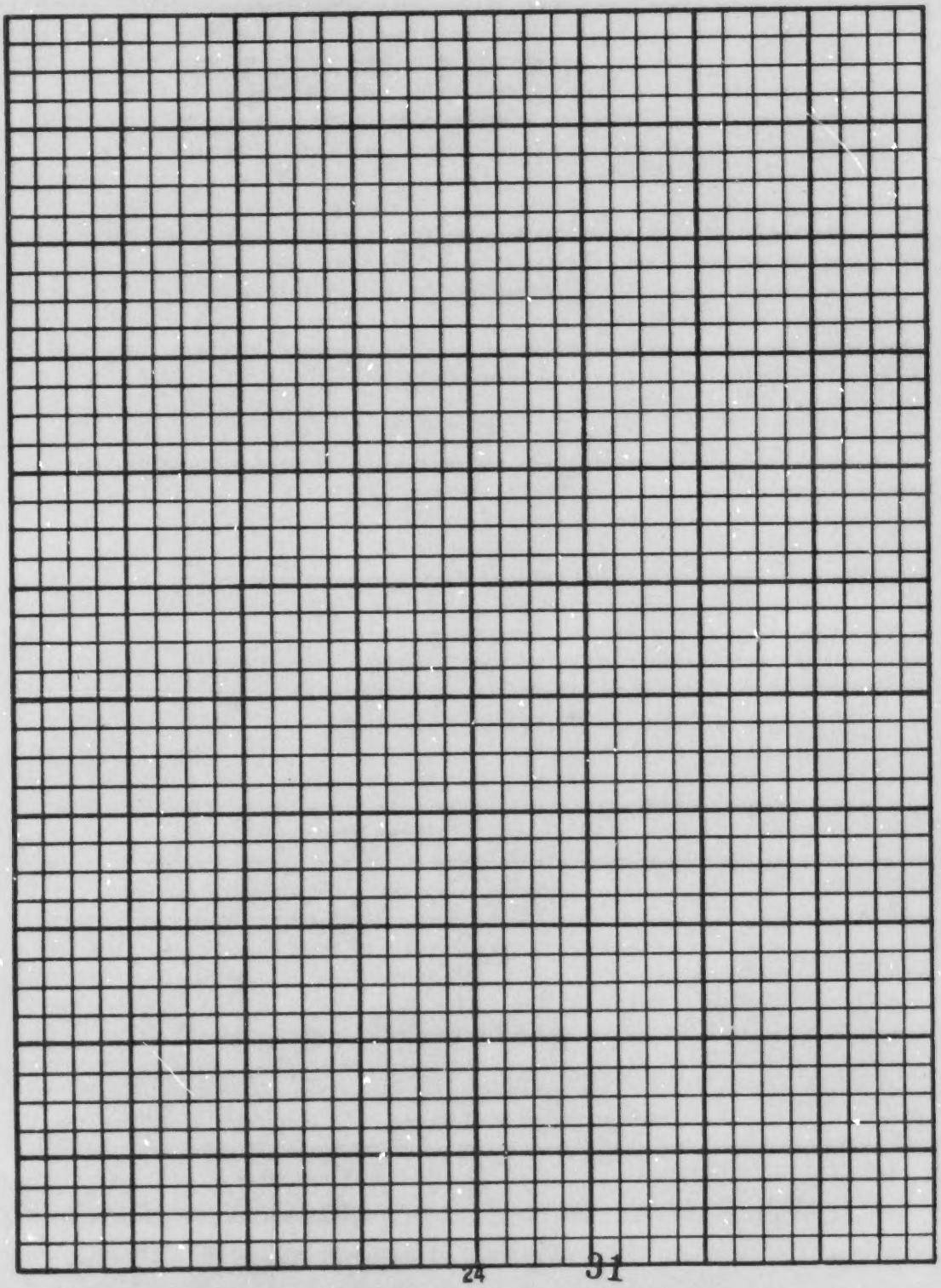
Groneman and Feirer, General Industrial Education, McGraw-Hill Book Co., Sixth Edition, 1979.

Fales, Sheets, Mervich, and Dinan, Manufacturing, McKnight Publishing Co., First Edition, 1980.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have the class read the assignment about design.	Introduction to Manufacturing, pp. 173-178 General Industrial Education, pp. 3-13 Manufacturing, pp. 87-90	
2	Explain the three major design requirements and give an example of each.	Pictures or Color Slides or Chalkboard	
3	Have the class make a folder on the five elements of design. Give an example and identify each.	Magazines Newspapers Catalogs	
4	Study and discuss Instruction Sheet I. Give a lecture with an illustration of how the four basic shapes of lines would be used in design.	Instruction Sheet I List on Chalkboard Pictures Color slides	
5	Study and discuss Instruction Sheet II. Let the class find examples of color combinations and how color is used in design.	Instruction Sheet II Catalogs Magazines Newspapers	
6	Have the class make a poster to illustrate the six basic principles of design. Divide the class into small groups of 4 people.	Poster board Markers (assorted colors) Glue or tape	

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
7	Ask the students to draw and describe the design process of a new or different type of rocket, dragster, house, bicycle, or chair.	Graph paper (master copy in this section) Pencil Ruler French Curve Compass Templates	
8	Read and Discuss Instruction Sheet III. Have the class make a design that would be unique or different from the ordinary. Suggestions: chair, hammer handle, golf club, table, cup, paper bag	Instruction Sheet III Graph paper Pencil Ruler French Curve Compass Templates	
9	Design a product that would include all of the elements and principles of good design. Use the Instructor's Final Checklist to evaluate each student's performance.	Ruler Pencil Graph Paper Templates Markers Compass French Curve Instructor's Final Checklist	

GRAPH PAPER



CHECK-OUT ACTIVITY I

DEFINING THE BASIC ELEMENTS AND PRINCIPLES OF DESIGN

Write answers to the following questions. Use your own paper.

1. List the three major design requirements.

2. List the five elements of design.

3. List the six basic principles of design.

CHECK-OUT ACTIVITY I

DEFINING THE BASIC ELEMENTS AND PRINCIPLES OF DESIGN.

1. List the three major design requirements.
   a. Function or Use
   b. Appearance or Pleasing to the eye
   c. Aesthetics or Beauty

2. List the five elements of design.
   a. Lines
   b. Form or Shape
   c. Color
   d. Volume or Space
   e. Texture

3. List the six basic principles of design.
   a. Unity
   b. Variety
   c. Emphasis
   d. Balance
   e. Repetition
   f. Rhythm

DESIGNING A PLASTIC PRODUCT

OBJECTIVES

GIVEN a design style, the necessary designing supplies, and modeling clay,

DESIGN A PLASTIC ICE SCRAPER, AND MAKE A CLAY MODEL.

YOUR DESIGN should be drawn to the proper scale and match the design style. YOUR CLAY MODEL should be true to your design.

ATTITUDES AND VALUES TO BE DEVELOPED

Students will appreciate the unique characteristics of plastics and their adaptability to the manufacturing process.

CONTENTS OF MODULE

Instruction Sheets	Learning Activity Number
I. DESIGNING A PLASTIC ICE SCRAPER	7
Instructor's Final Checklist	
DESIGNING A PLASTIC PRODUCT	8

CHECK-OUT ACTIVITY

Your teacher will provide the necessary supplies. Choose one of the designs in Instruction Sheet I, and draw the design on graph paper. Make a clay model of your design.

SUGGESTED REFERENCES

Groneman and Feirer, General Industrial Education, McGraw-Hill Book Co., Sixth Edition, 1979.

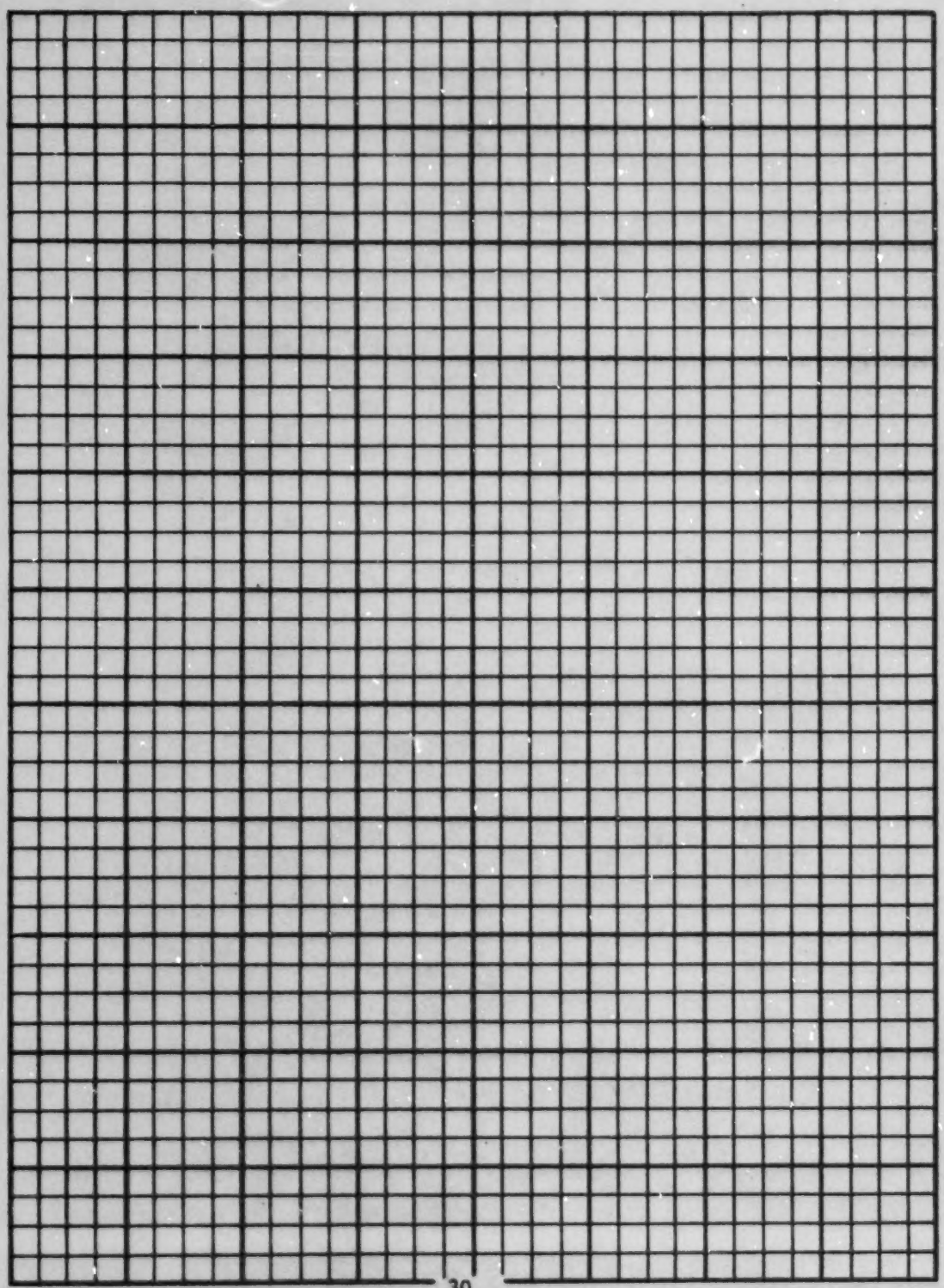
Jambro, Introduction to Manufacturing, Delmar Publishing Co., 1982.

Fales, Sheets, Mervich, Dinan, Manufacturing, A Basic Text for Industrial Arts, McKnight Publishing Co., First Edition, 1980.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have the students read about plastics.	General Industrial Education, pp. 290-322 Introduction to Manufacturing, pp. 34-42 Manufacturing, pp. 380-384	
2	Using a reference, have the students write a definition of plastic. Discuss the various definitions. Also have the class list five occupations in the plastics industry.	References listed above	
3	Provide the class a list of plastic products. Ask the students to collect samples of some of the products and bring them to class for exhibition. Have students identify the characteristics of several of the products. Also identify unusual uses of these plastics.	List of plastic products	
4	Give a lecture/demonstration on the two classes of plastics. Show examples of each.	Examples of thermoplastic Examples of thermosetting plastic	
5	As a class, discuss the five types of plastics. Let the students identify the types of plastics used in the samples.	Products collected in Learning Activity 3	

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
6	Have the class find pictures of products made from wood, rubber, and metal. Also have them find the same products made of plastic. Compare the products. Discuss why each plastic product needs the qualities of the plastic from which it is made.	Magazines Newspapers Catalogs Pictures Books	
7	Have the class examine the three styles of ice scrapers. Discuss the features of each style. Ask the students to explain why plastic is the best material for producing an ice scraper.	Instruction Sheet I	
8	Have each student choose one of the styles in Instruction Sheet I and design the ice scraper on graph paper. When the design has been approved, have him/her make a clay model of the ice scraper. (NOTE: You may decide to let students create a design other than the ice scraper if they so desire.) Use the Instructor's Final Checklist to evaluate each student's work.	Instruction Sheet I Pencils Rulers Graph paper (Master Copy in this section) Compass French curve Templates T-square Drawing board 45-degree triangle 30/60-degree triangle Eraser Tape Modeling clay Instructor's Final Checklist	

GRAPH PAPER



DEVELOPING A PRODUCTION FLOW CHART

OBJECTIVES

GIVEN a flow process chart form, pencil, ruler, templates, and list of products,

CHOOSE A PRODUCT AND DEVELOP AN OPERATION PROCESS CHART AND A FLOW PROCESS CHART FOR THE PRODUCT.

YOUR CHARTS will be rated in accordance with the Instructor's Final Checklist.

ATTITUDES AND VALUES TO BE DEVELOPED

Students will realize that a flow chart is a valuable tool used to manufacture a product in the fastest, cheapest, and safest way.

CONTENTS

Instruction Sheets	Learning Activity Number
I. STANDARD FLOW CHART SYMBOLS	3
II. OPERATION PROCESS CHART FOR BOTTLE OPENER	4
III. FLOW PROCESS CHART FOR BOTTLE OPENER	4
Instructor's Final Checklist	
DEVELOPING A PRODUCTION FLOW CHART	6

CHECK-OUT ACTIVITY

Your teacher will provide a list of products, a blank flow process chart, ruler, and templates. Choose a product and develop an operation process chart and a flow process chart for the production of the product.

SUGGESTED REFERENCES

Fales, Sheets, Mervich, Dinan, Manufacturing-A Basic Text for Industrial Arts, McKnight Publishing Co., First Edition, 1980.

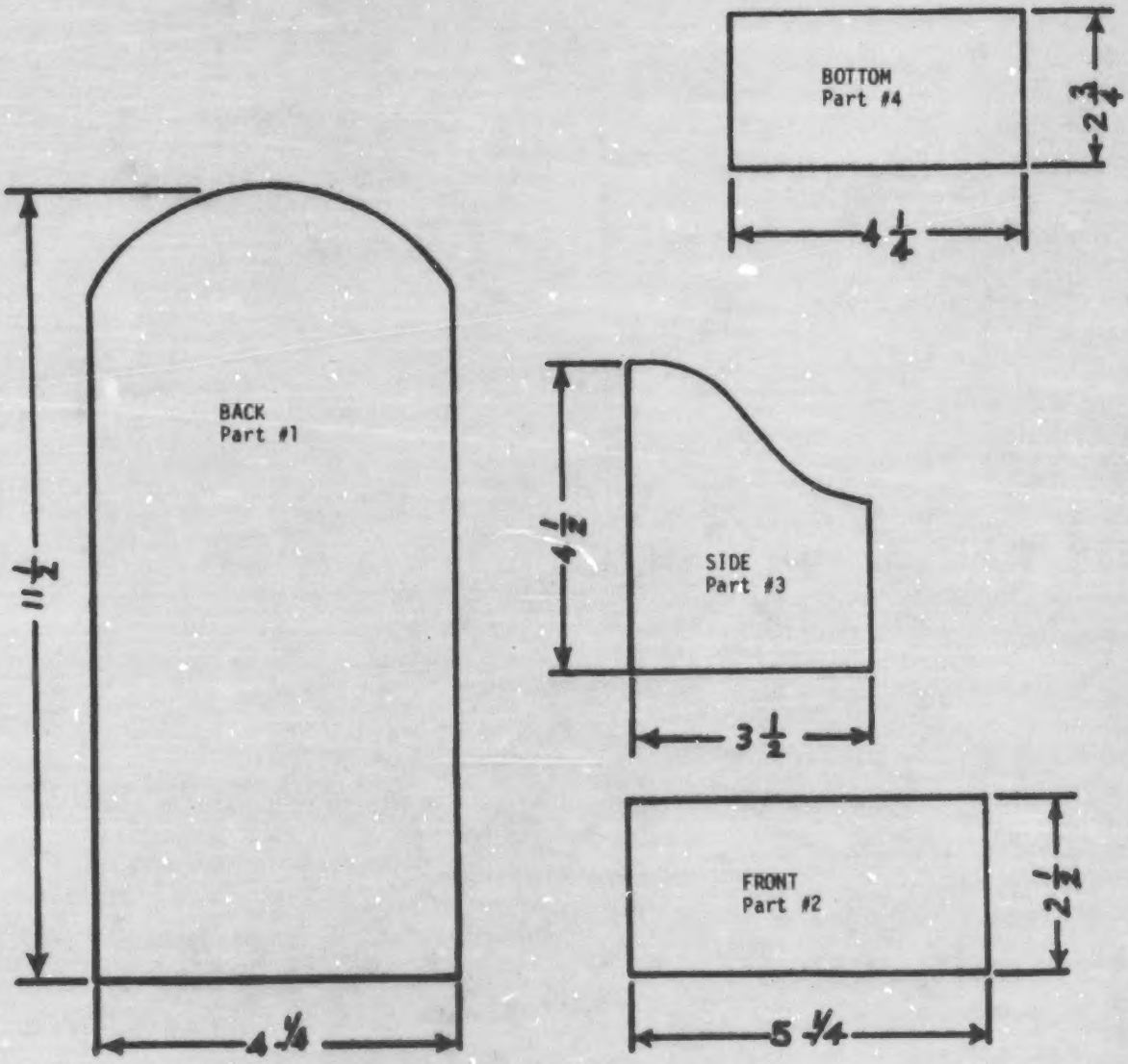
Jambro, Introduction to Manufacturing, Delmar Publishing Co., 1982.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have the class read about flow charts.	Manufacturing-A Basic Text for Industrial Arts, pp. 124-126 Introduction to Manufacturing, pp. 273-283.	
2	Explain the importance of flow charts, how they are used, and how they work.		
3	Have the class examine the flow chart symbols in Instruction Sheet I or in a reference. Discuss how each symbol is used in producing a flow chart.	Instruction Sheet I	
4	Make a transparency or handouts of the parts for a bottle opener. Have students study the operation process chart for the production of the bottle opener. Discuss each step in producing the product. Then have them study the flow process chart for producing the side of the bottle opener. Discuss each step marked on the chart.	"Manufacturing Project Parts List" (Master Copy in this section) Instruction Sheet II Instruction Sheet III	
5	Divide the class into groups of four. Let each group practice making an operation process and a flow process chart.	Suggested activities or products: --Sharpen a pencil --Replace a refill in an ink pen --Peg game/golf tee game	

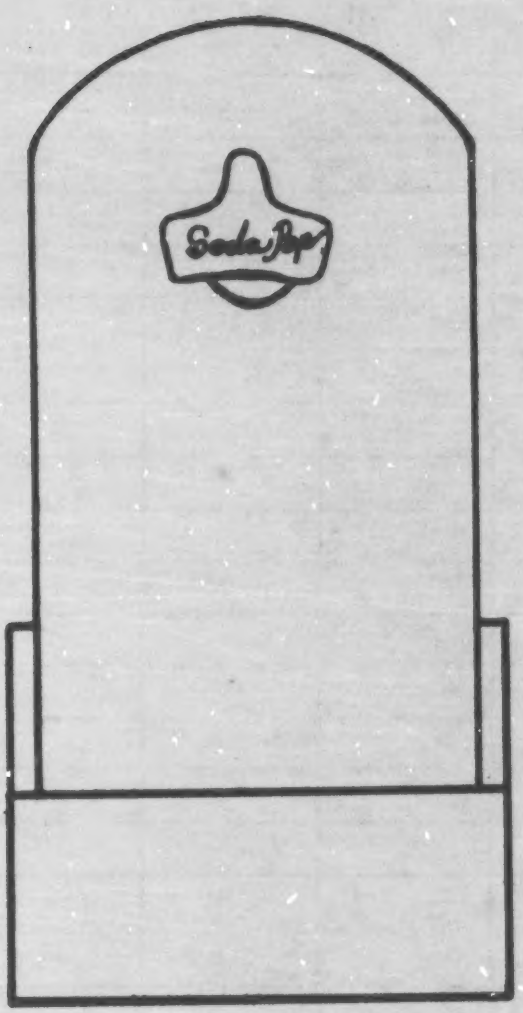
LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
5	Provide a list of exercises from which each group can choose an activity to chart.	--Model rocket --Model dragster	
6	Develop a list of products that are simple to produce. Divide the class into groups of four. Provide each group with the necessary tools. Have each group choose a product and develop an operation process chart and a flow process chart for the production of the product. Use the Instructor's Final Checklist to evaluate each group's work.	List of products Blank flow process charts Rulers Templates Instructor's Final Checklist	

Manufacturing Project Parts List

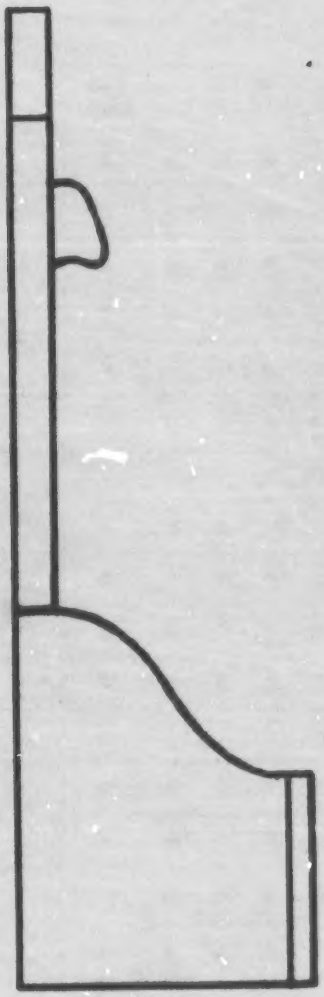
BOTTLE OPENER



Manufacturing Project Parts List (p. 2)



Front View



Right Side View

FLOW PROCESS CHART

Part Name _____ Part Number _____

Operation _____ Date _____

○ ⇨ □ D ▽	Description	Distance	Quantity	Time

○ Operation ⇨ Transportation □ Inspection D Delay ▽ Storage

MASS-PRODUCING A PRODUCT

OBJECTIVE

GIVEN a pattern, a Flow Process Chart, and the necessary tools and equipment,

HELP SET UP AN ASSEMBLY LINE AND PARTICIPATE IN MASS-PRODUCING A GOLF TEE GAME.

YOU SHOULD follow the procedure as outlined in the Flow Process Chart and produce the part of the game which your instructor assigns you.

ATTITUDES AND VALUES TO BE DEVELOPED

--Students will recognize the efficiency of the assembly line.
--Students will realize that interchangeable parts are the basis of the manufacturing process.

CONTENTS

	Learning Activity Number
Instructor's Final Checklist	
MASS-PRODUCING A PRODUCT	6

CHECK-OUT ACTIVITY

You will be provided the necessary materials for producing a golf tee game. Work with a group of students to set up an assembly line and mass-produce the game.

SUGGESTED REFERENCES

Fales, Sheets, Mervich, Dinan, Manufacturing-A Basic Text for Industrial Arts, McKnight Publishing Company, First Edition, 1980.

Jambro, Introduction to Manufacturing, Delmar Publishing Company, 1982.

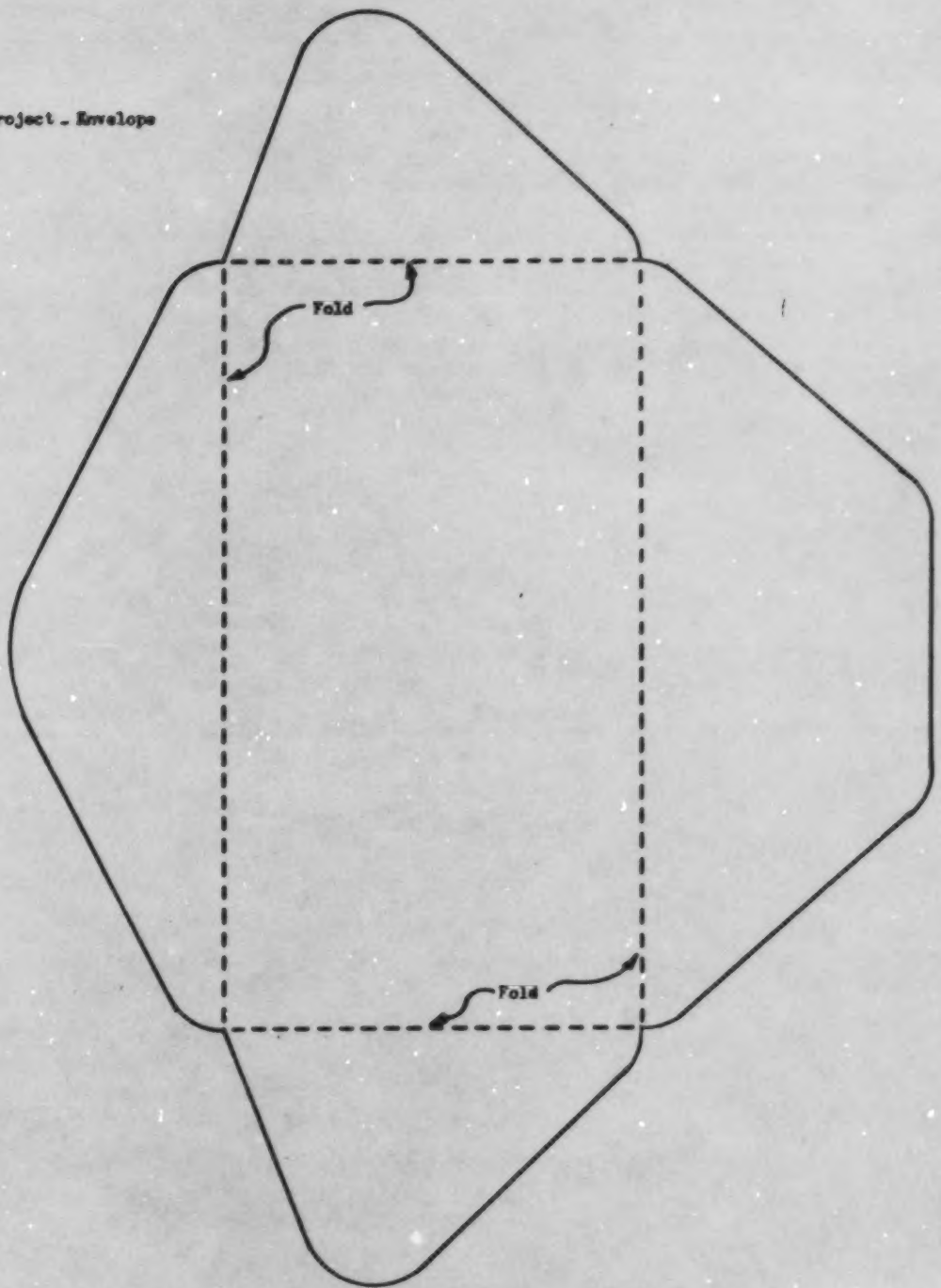
Occupational Outlook Handbook, U.S. Department of Labor Publication, 1978-79 or 1980-81 Editions.

Hopike, The Encyclopedia of Career and Vocational Guidance, Doubleday & Company, Ferguson Publishing Company, Volume II, 1967.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have the class read about assembly lines. If possible, arrange with a local industry for the class to visit an assembly line in operation.	Manufacturing-A Basic Text for Industrial Arts, pp. 30-33, 128-129, 153 Introduction to Manufacturing, pp. 4-5	
2	Provide a lecture on the history of assembly lines. Invite a resource person from a local industry to speak on the advantages of the assembly line.	Suggested Resource Persons: Plant manager Assembler Factory lay-out engineer	
3	Have the class make sketches of assembly lines.		
4	Have the students write a two-page report on the job of an assembler.	Occupational Outlook Handbook, "Industrial Production and Related Occupations" The Encyclopedia of Career and Vocational Guidance	
5	Divide the class into small groups of five each. Provide each group a copy of the pattern and the Flow Process Chart. Have the group members set-up an assembly line and mass-produce the envelope.	"Envelope" (Master Copy in this section) "Flow Process Chart" (Master Copy in this section)	

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
6	Have the class set up an assembly line for mass-producing the golf tee game. Assign each student the part he/she is to produce. Have the students mass-produce the game. Use the Instructor's Final Checklist to evaluate each student's performance.	"Project-Golf Tee Game" (Master Copy in this section) "Flow Process Chart" (Master Copy in this section) Wooden Golf Tees 3/4" Wood Stock Patterns/Templates for Layout Jigs and Fixtures for Cutting and Drilling Scratch Awl 3/16" Drill Bit Countersink Sandpaper Disc Sander Wood Rasp Table Saw Drill Press Wood Finish Quart Freezer Bags Stapler and Staples Instructor's Final Checklist	

Project - Envelope



FLOW PROCESS CHART

Part Name Envelope Part Number 00023

Operation _____ Date 1/15/83

	Description	Distance	Quantity	Time
	Trace Pattern		25	10 minutes
	Move to cutters	6 feet		
	Cut out design		25	15 minutes
	Move to glue table	6 feet		
	Rubber cement edges		25	13 minutes
	Fold edges		25	10 minutes
	Move to package area	8 feet		
	Package in Freezer Bags		25	20 minutes
	Hold for Distribution			

○ Operation ⇨ Transportation □ Inspection ⌐ Delay ▽ Storage

Check-Out Activity

PROJECT-GOLF TEE GAME

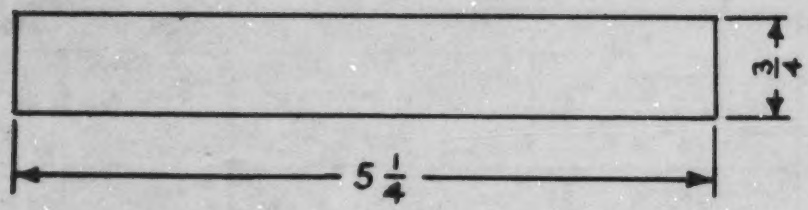
Student's Name _____

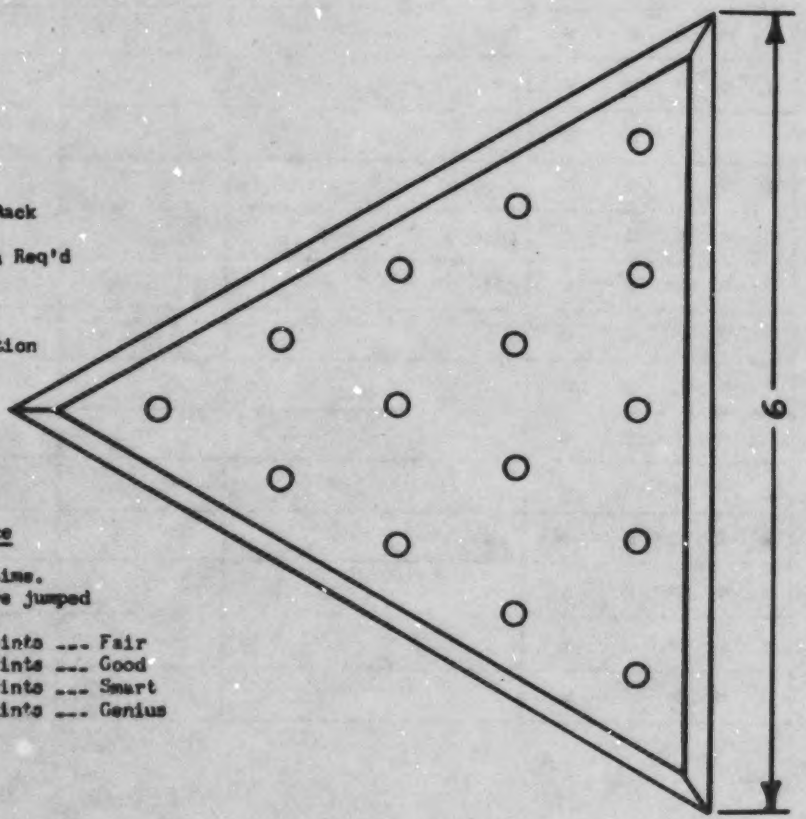
FLOW CHART

BOARD

1. Layout
2. Cut to Size
3. Layout Holes
4. Drill Holes
5. Chamfer Edges
6. Sand
7. Countersink Holes
8. Inspection
9. Attatch Rules on Rack
10. Assemble Pegs - 14 Req'd
11. Package

Hold for Distribution





Rules for Golf Tee Game

1. Jump only 1 Tee at a time.
2. Remove Tees as they are jumped
3. Score as Follows:
   - 4 Tees left . . . 5 points ___ Fair
   - 3 Tees left . . .10 points ___ Good
   - 2 Tees left . . .15 points ___ Smart
   - 1 Tee left . . .25 points ___ Genius

BEST COPY AVAILABLE

FLOW PROCESS CHART

Part Name Golf Tee Game Part Number 00018

Operation _____ Date 1/15/83

	Description	Distance	Quantity	Time
	Move to Radial Arm Saw	4 feet		
	Rough Cut Stock		25	10 minutes
	Move to Workbench	5 feet		
	Layout-Use template		25	8 minutes
	Move to Table Saw	10 feet		
	Cut-Use Jig or Fixture		25	12 minutes
	Move to Sander	3 feet		
	Sand chamfer on edges		25	20 minutes
	Move to Drill Press	8 feet		
	Drill Holes - 3/16" Jig		25	25 minutes
	Countersink Holes		25	20 minutes
	Move to Workbench	3 feet		
	Sand		25	25 minutes
	Inspection			
	Finish		25	25 minutes
	Attach Rules		25	15 minutes
	Package in Freezer Bags		25	15 minutes
	Storage			

Operation Transportation Inspection Delay Storage

CONDUCTING A MARKET SURVEY

OBJECTIVES

(1) GIVEN a product and a Consumer Survey questionnaire,

CONDUCT A CONSUMER SURVEY.

YOU SHOULD survey at least five classmates and make sure that all questions have been answered.

(2) GIVEN the completed Consumer Survey questionnaire and a Market Research form,

COMPLETE THE MARKET RESEARCH FORM.

YOU SHOULD complete the form with 100% accuracy.

ATTITUDES AND VALUES TO BE DEVELOPED

--Students will realize the important part that research plays in the planning of production stage of the product.
--Students will develop the basic concept of wise consumer choice of products.

CONTENTS

	Learning Activity Number
Instructor's Final Checklist	
CONDUCTING A MARKET SURVEY	7

CHECK-OUT ACTIVITIES

(1) You will be provided a Consumer Survey questionnaire. Bring a product from home, and have five classmates complete the questionnaire about the product.

(2) You will be provided a Market Research form. Complete the form, using the results of your consumer survey.

SUGGESTED REFERENCES

Fales, Sheets, Mervich, Dinan, Manufacturing - A Basic Text for Industrial Arts, McKnight Publishing Co., First Edition, 1980.

Jambro, Introduction to Manufacturing, Delmar Publishing Co., 1982.

SUGGESTED REFERENCES

Consumer Choice, Proctor & Gamble, Educational Services, P.O. Box 14009, Cincinnati, OH 45214. Teacher's manual, filmstrip, student worksheets, game, $9.00. (This reference is optional.)

Consumer Advertising, Proctor & Gamble, Educational Services, P.O. Box 14009, Cincinnati OH 45214. Teacher's manual, filmstrip, student worksheets, wall chart, $9.00. (This reference is optional.)

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have students read about market surveys. Discuss the information. Discuss the four reasons for conducting a market survey: --Types of people who will buy the product. --How much consumers are willing to pay for the product. --What the consumers like or dislike about the product. --What special characteristics of the product do the consumer expect.	Manufacturing - A Basic Text for Industrial Arts, pp. 159-161, 83-84, 93-94 Introduction to Manufacturing, pp. 215-216 Consumer Choice (optional)	
2	Discuss the major methods of conducting surveys: --Personal interview --Telephone interview --Mailed questionnaire Let teams of students role play each type of survey and/or make posters illustrating each method.	Play telephones Questionnaires in envelopes Poster supplies	
3	Have students bring a product or a picture of a product to class and explain its features.	Products Pictures of products Consumer Advertising (optional)	
4	Discuss the stages of a product's life cycle: --Introduction --Growth --Maturity --Decline		

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
	Have students list products that have long life cycles and products that have short life cycles.		
5	Show the class the "Consumer Survey" questionnaire on the overhead projector. Have the class analyze the questions to determine if they cover the four reasons for conducting a survey (Learning Activity 1.) Demonstrate how to complete the questionnaire by marking the appropriate answer for each question.	"Consumer Survey" (Master Copy in this section) Transparency of the "Consumer Survey" Marker Overhead projector	
6	Show the class the "Market Research" form on the overhead projector. Show the students how to summarize the results of the consumer survey and record them on the "Market Research" form.	"Market Research" form (Master Copy in this section) Transparency of "Market Research" form "Consumer Survey" you completed in Learning Activity #5 Overhead projector	
7	Have each student select a product from home and have five classmates complete the "Consumer Survey" about the product. When the questionnaires are complete have students fill out the "Market Research" form.	"Consumer Survey" (Master Copy in this section) "Market Research" form (Master Copy in this section) Products Instructor's Final Checklist	

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
	Use the Instructor's Final Checklist to evaluate each student's work.		

CONSUMER SURVEY FOR _____
(Product)

Directions: Place a ✓ in the space by the most appropriate answer.

A. Sex
_____ 1. Male
_____ 2. Female

B. Age
_____ 3. 11 yrs.
_____ 4. 12 yrs.
_____ 5. 13 yrs.
_____ 6. 14 yrs.

C. Do you currently have this product?

_____ 7. Yes
_____ 8. No

D. Do you know the name of the manufacturer?

_____ 9. Yes
_____ 10. No

E. Have you seen this product in a store?

_____ 11. Yes
_____ 12. No

F. Have you seen an advertisement of this product in the last 60 days?

_____ 13. Yes
_____ 14. No

G. Where did you see the advertisement?

_____ 15. Radio
_____ 16. Newspaper
_____ 17. Television
_____ 18. Magazine
_____ 19. Billboard

H. If you bought this product, where would it be used the most?

_____ 20. At home
_____ 21. At school
_____ 22. At work

I. How much would you pay for this product?

_____ 23. $ .25
_____ 24. $ .50
_____ 25. $ .75
_____ 26. $1.00
_____ 27. $1.50
_____ 28. $2.00

J. How often would you use this product?

_____ 29. Daily
_____ 30. Weekly
_____ 31. Monthly
_____ 32. Other _____

K. How often would this product be replaced?

_____ 33. Weekly
_____ 34. Monthly
_____ 35. Yearly
_____ 36. Other _____

MARKET RESEARCH FOR _____
(Product)

1. On _____ a consumer survey was conducted with _____
date total of 1 and 2

consumers, of whom _____ were male and _____ were female.
total of 1 total of 2

2. The number of consumers surveyed, by age groups were _____ 11
total of 3

years old, _____ 12 years old, _____ 13 years old, or
total of 4 total of 5

_____ 14 years old.
total of 6

3. A total of _____ consumers presently have this product, and
total of 7

_____ do not.
total of 8

4. _____ knew the name of the manufacturing company, and
total of 9

_____ did not.
total of 10

5. _____ consumers had seen this product in a store, and
total of 11

_____ had not.
total of 12

6. A total of _____ had seen the product advertised, and
total of 13

_____ had not.
total of 14

7. Most of the consumers who knew about the product had seen it advertised by _____ method.
highest of 15-19

8. Most of them would use the product for _____ use.
highest of 20-22

9. Most of those surveyed would pay _____ for the product.
highest of 23-38

10. The consumers would most likely use this product on a _____ basis.
highest of 29-32

11. The product would have to be replaced _____.
highest of 33-36

COMPOSING A COMPANY NAME AND DESIGNING A TRADEMARK

OBJECTIVE

GIVEN the necessary supplies,

COMPOSE A COMPANY NAME AND DESIGN THE COMPANY TRADEMARK.

THE NAME should be easy to remember and indicate the nature of the business. THE TRADEMARK should be easy to read and recognize, suitable for advertising and packaging, timely, and in good taste.

ATTITUDES AND VALUES TO BE DEVELOPED

--Students will learn to recognize and to appreciate effective company names and well designed trademarks.

CONTENTS

	Learning Activity Number
Instructor's Final Checklist	
COMPOSING A COMPANY NAME AND DESIGNING A TRADEMARK	6

CHECK-OUT ACTIVITY

Identify a product or service, and compose a name for a new company that will offer that particular product or service. Design a trademark for the company.

SUGGESTED REFERENCE

Fales, Everett, Sheets, Mervich, Dinan, Manufacturing - A Basic Text for Industrial Arts, McKnight Publishing Company, First Edition, 1980.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have the class read about companies and trademarks. Discuss the information. Have the students write the definition of a trademark.	Manufacturing - A Basic Text for Industrial Arts, pp. 104-106, 117-118, 155	
2	Explain the reasons why companies are formed: --To make products --To perform a service --To make a profit Present some hypothetical examples, and have students discuss reasons why companies were formed.	Chalkboard or Overhead projector	
3	Have students list several names of local companies and identify the products they sell and/or services they perform. Using the objective standard, have the class analyze the names.	Telephone directory Business directory	
4	Have students find examples of trademarks and analyze them according to the standard in the objective. They may make posters or folders of the trademarks.	Examples of trademarks	
5	Provide the students copies of the puzzle. Have them solve the puzzle, identify the trademark name, and identify the company it represents: "Tony the Tiger" which represents Kelloggs.	"Trademark Puzzle" (Master Copy in this section)	

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
6	Have students identify a product or service, and name a new company that will offer that product or service. Also have them design a trademark for the company. Use the Instructor's Final Checklist to evaluate the names and trademarks. NOTE: You may have the class select the best design, duplicate it, and include it on a product made by the students.	Graph Paper Sketching supplies: --Rulers --Templates --Compass --French Curve --Pencils Instructor's Final Checklist	

TRADEMARK PUZZLE

QUESTION:

A. What is the Trademark Name?

_____

B. What company does it represent?

_____

DEFINING THE MAJOR TYPES OF COMPANY OWNERSHIPS

OBJECTIVE

GIVEN a pencil-and-paper test on the major types of company ownerships,

COMPLETE THE TEST.

YOU SHOULD complete the test with 90% accuracy.

ATTITUDES AND VALUES TO BE DEVELOPED

--Students will understand that companies are operated under one of three types of ownerships: proprietorship, partnership, or corporation.

CONTENTS

	Learning Activity Number
Instructor's Final Checklist	
DEFINING THE MAJOR TYPES OF COMPANY OWNERSHIPS	5

CHECK-OUT ACTIVITY

Your teacher will provide a test on major types of company ownerships. Take the test.

SUGGESTED REFERENCES

Jambro, Introduction to Manufacturing, Delmar Publishing Co., 1982.

Fales, Sheets, Mervich, Dinan, Manufacturing - A Basic Text For Industrial Arts, McKnight Publishing Company, First Edition, 1980.

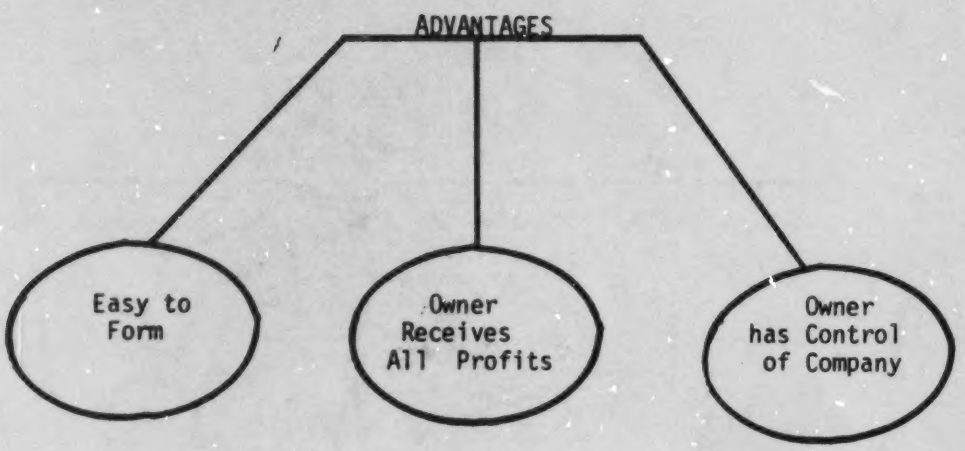
LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have the class read about the types of company ownerships. Discuss the information.	Introduction to Manufacturing, pp. 203-209 Manufacturing, pp. 106-109	
2	Support the reading material by giving a class lecture on each type of company ownership. After presenting each type, show the class the diagrams on its advantages and disadvantages.	Transparency Masters in this section: "Proprietorship" "Advantages and Disadvantages of Proprietorship" "Partnership" "Advantages and Disadvantages of Partnerships" "Corporation" "Advantages and Disadvantages of Corporations" Transparencies Overhead projector	
3	Have students identify local businesses that fall under each type of ownership. (Students may have to contact a business to determine the type of ownership.) If a company includes an "Incorporated" in its title, it is a corporation. However, many corporations--particularly small ones--do not use it.)		
4	Divide the class into small groups. Have each group write a brief description of a business.		

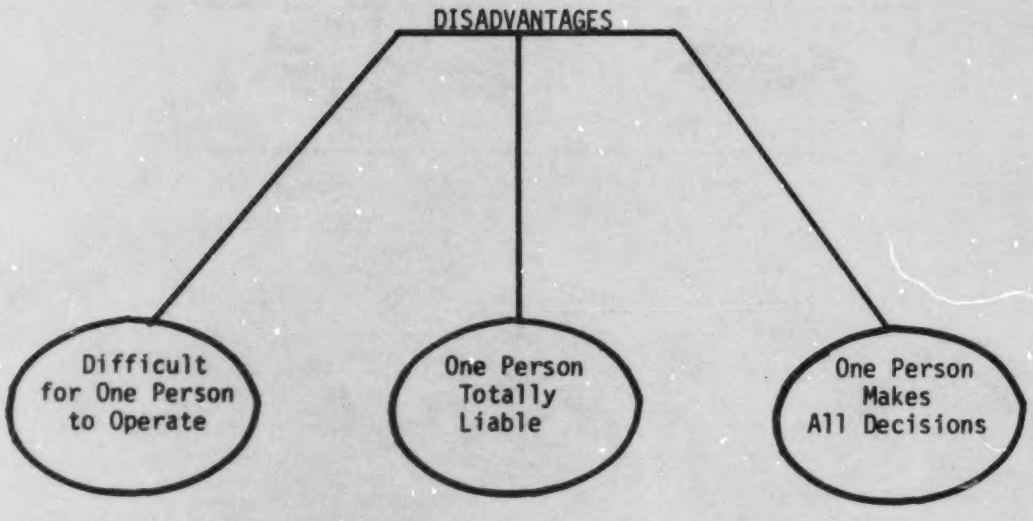
LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
	Let them play a game in which each group reads its description while the rest of the class guesses its type of ownership.		
5	Provide each student a copy of the test, and have him/her complete it. Use the Answer Key to check the answers. Use the Instructor's Final Checklist to evaluate each student.	Check-Out Activity Sheet Answer Key (Copy in this section) Instructor's Final Checklist	

PROPRIETORSHIP

A proprietorship is a business owned and operated by one person. It is the oldest type of ownership. It is for small companies.

ADVANTAGES AND DISADVANTAGES OF PROPRIETORSHIP

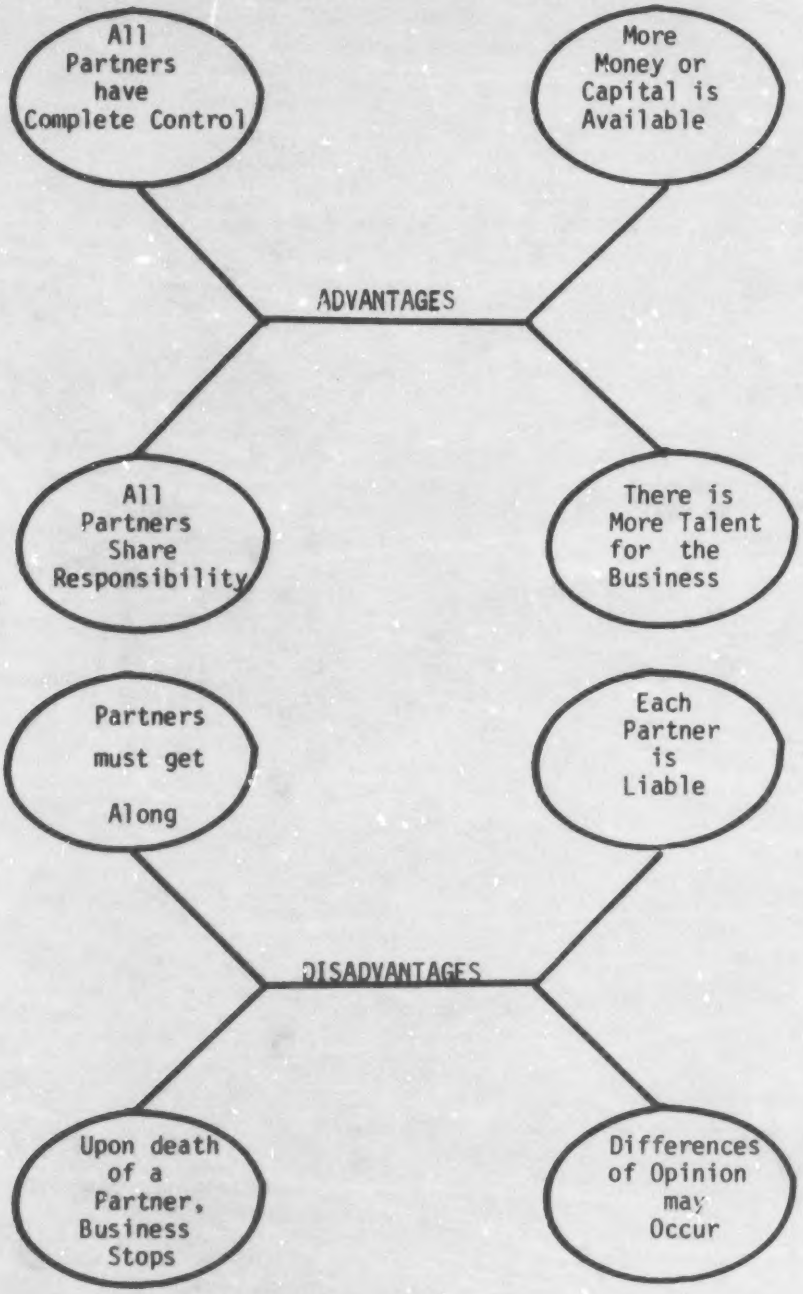




PARTNERSHIP

Two or more people share the responsibility. Each partner has full power and can act as though he or she were the only owner. Each partner's action has a direct influence on the operation of the business.

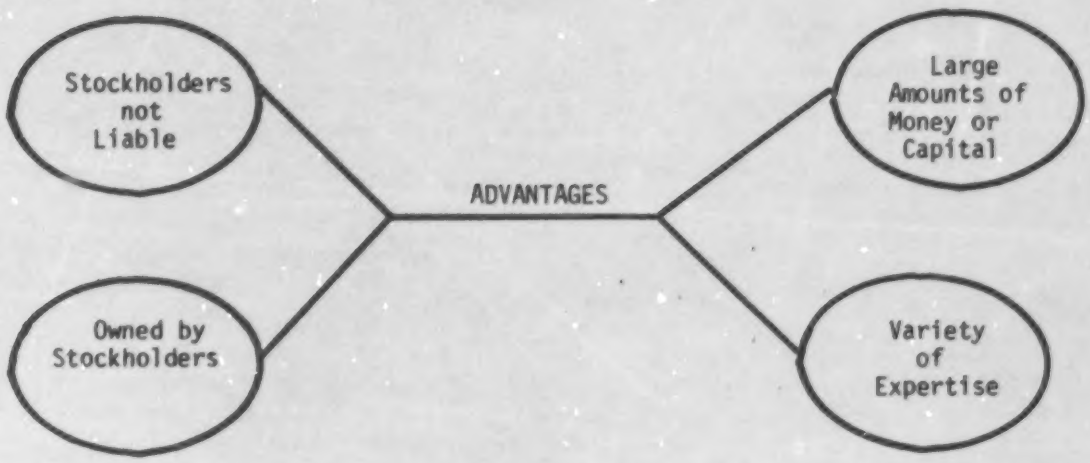
ADVANTAGES AND DISADVANTAGES OF PARTNERSHIPS

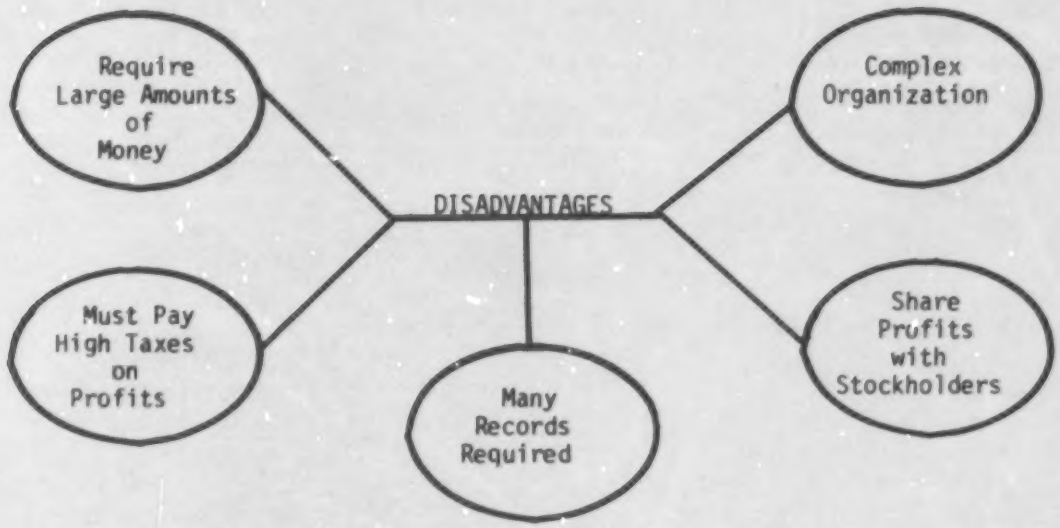

All Partners have Complete Control
More Money or Capital is Available
ADVANTAGES
All Partners Share Responsibility
There is More Talent for the Business
Partners must get Along
Each Partner is Liable
DISADVANTAGES
Upon death of a Partner, Business Stops
Differences of Opinion may Occur

CORPORATION

A corporation is a company that is owned by many people called stockholders. It is the most common type of ownership. It is also one of the most complex ownerships. About three-fourth of the business in the U.S. is done by this type of company ownership.

ADVANTAGES AND DISADVANTAGES OF CORPORATIONS





Check-Out Activity

DEFINING THE MAJOR TYPES OF COMPANY OWNERSHIPS

Answer the following questions. USE YOUR OWN PAPER.

1. Define the major types of company ownerships:

   a. Proprietorship
   b. Partnership
   c. Corporation

2. Name two advantages of a proprietorship.

3. List three disadvantages of a partnership.

4. Name three advantages of a corporation.

5. List the name of the actual business for each type of company ownership.

Check-Out Activity

DEFINING THE MAJOR TYPES OF COMPANY OWNERSHIPS

Answer the following questions. USE YOUR OWN PAPER.

1. Define the major types of company ownerships:

   a. Proprietorship - a company owned and operated by only one person.
   b. Partnership - a company owned and operated by two or more persons.
   c. Corporation - a company which sells stocks to a group of people who become co-owners. It is formed under state or federal law.

2. Name <u>two</u> (of three) advantages of a proprietorship.

   a. Easy to form.
   b. Owner has complete control of the company.
   c. Owner receives all of the profits.

3. List <u>three</u> (of four) disadvantages of a partnership.

   a. Partners must be able to get along.
   b. Differences of opinion may occur.
   c. Upon death of a partner, the business stops.
   d. Each partner is liable.

4. Name <u>three</u> (of four) advantages of a corporation.

   a. The company is owned by stockholders.
   b. Stockholders are not liable individually.
   c. Large amounts of money or capital.
   d. Offers a variety of expertise.

5. List the name of the actual business for each type of company ownership.

   (Answers will vary.)

EXPLAINING FUNCTIONS OF INDUSTRIAL RELATIONS PERSONNEL

OBJECTIVE

GIVEN a pencil-and-paper test on the functions of industrial relations personnel,

COMPLETE THE TEST.

YOU SHOULD complete the test with 90% accuracy.

ATTITUDES AND VALUES TO BE DEVELOPED

--Students will realize that one of the most important functions of a company's operation is dealing with its people.

CONTENTS

Instruction Sheet	Learning Activity Number
I. WHAT ARE INDUSTRIAL RELATIONS?	3
Instructor's Final Checklist	
EXPLAINING FUNCTIONS OF INDUSTRIAL RELATIONS PERSONNEL	5

CHECK-OUT ACTIVITY

Your teacher will provide a test about the functions of industrial relations personnel. Take the test.

SUGGESTED REFERENCES

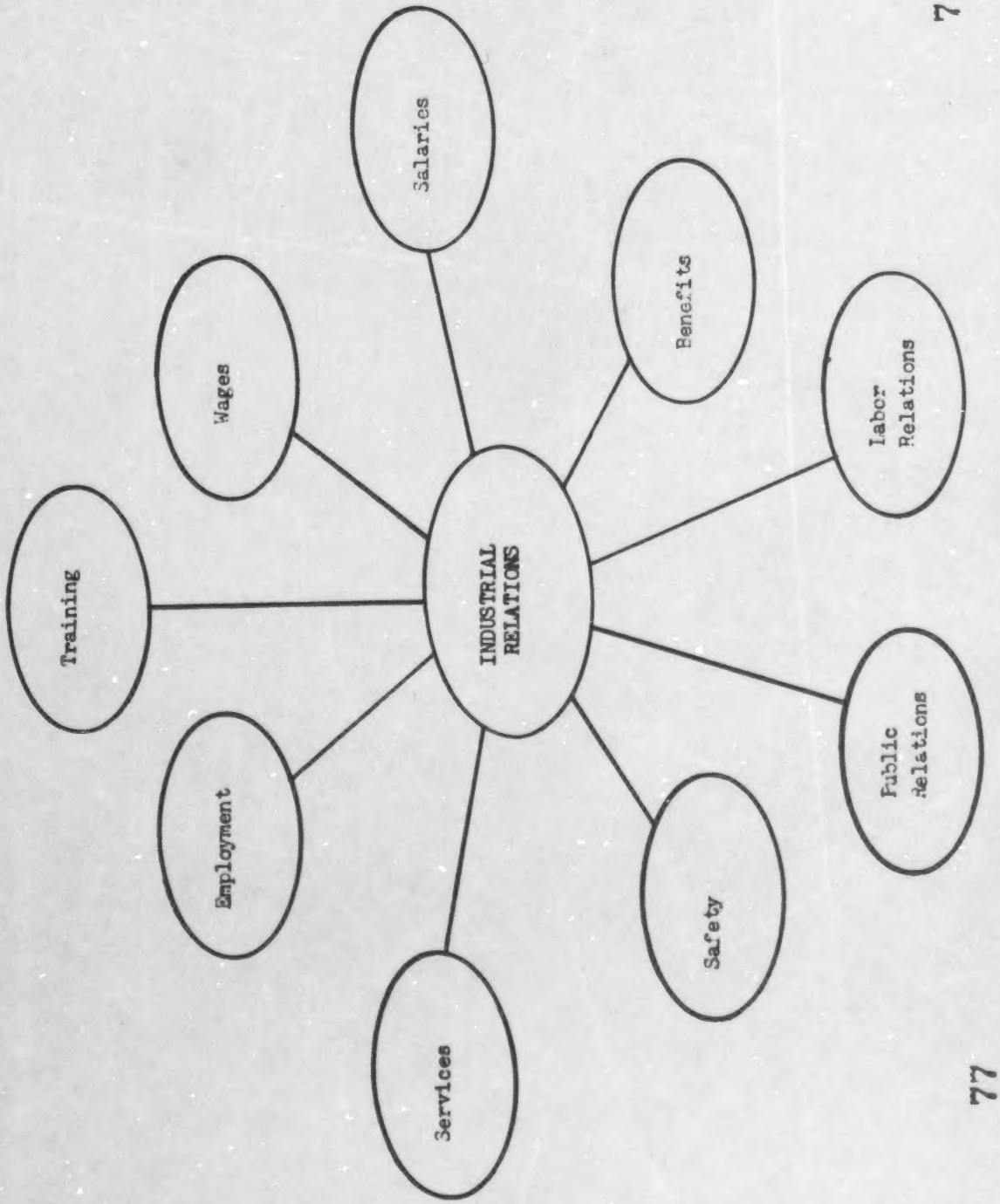
Fales, Sheets, Mervich, Dinan, Manufacturing-A Basic text for Industrial Arts, McKnight Publishing Co., First Edition, 1980.

Jambro, Introduction to Manufacturing, Delmar Publishing Co., 1982.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have the class read about industrial relations and discuss the information.	Manufacturing-A Basic Text for Industrial Arts, pp. 110, 113, 140 Introduction to Manufacturing, pp. 225-243	
2	Support the reading material by showing the class a diagram of the functions of industrial relations.	"Functions of Industrial Relations" (Master Copy in this section) Transparency Overhead projector	
3	The Instruction Sheet explains each of the functions included in the above diagram. Have the class read and discuss one topic at a time.	Instruction Sheet I	
4	Let the students role play some of the activities described in Instruction Sheet I. Some suggested activities are: --Explain how to complete a resume and have the class complete one. --Explain how to complete a job application and have the class complete one. --Explain how to perform a task. --Figure wages earned. --Plan a social, recreational, or other fun activity.	Instruction Sheet I "Resume" (Master Copy in this section) "Employment Application" (Master Copy in this section) "The Occupational Safety and Health Act" (Master Copy in this section)	

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
4	--Explain the functions of OSHA. --Write a news article about the good things a company is doing. --Demonstrate a collective bargaining session.		
5	Provide each student a copy of the test for completion. Check the answers by the Answer Key. Use the Instructor's Final Checklist to evaluate each student.	Check-Out Activity Sheet Answer Key (copy in this section) Instructor's Final Checklist	

FUNCTIONS OF INDUSTRIAL RELATIONS



78

77

RESUME

Name _____

Address _____

_____

Phone No. _____

Education: _____ High School

_____ College or University

Special Training _____

_____

Work Experience _____ Job

_____ Duties

_____ Supervisor

Job References 1 _____ Name

_____ Occupation

_____ Address

2 _____ Name

_____ Address

_____ Occupation

Personal Information _____ Age _____ Height

_____ Health _____ Weight

_____ Married/Single _____ Birth Date

_____ Children _____ Eye Color

_____ Spouse _____ Hair Color

_____ Occupation

Hobbies _____

Special Awards _____

EMPLOYMENT APPLICATION

(PRINT)

JOB APPLIED FOR _____ DATE _____

PERSONAL:

NAME _____ BIRTH DATE _____

ADDRESS _____

TELEPHONE _____ SOCIAL SECURITY NUMBER _____

HAVE YOU EVER BEEN CONVICTED OF A FELONY? YES ☐ NO ☐

IF SO, EXPLAIN _____

EDUCATION:

LAST SCHOOL ATTENDED _____

MARK LAST YEAR COMPLETED 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

SKILLS, SPECIAL TRAINING, LICENSES _____

EXPERIENCE:

STARTING WITH THE LAST ONE FIRST, LIST YOUR EMPLOYERS

PERIOD EMPLOYED	NAME & ADDRESS	SALARY	JOB

HEALTH:

DO YOU HAVE ANY PHYSICAL CONDITION THAT COULD LIMIT YOUR ABILITY TO PERFORM THIS JOB? YES ☐ NO ☐ IF SO, EXPLAIN _____

REFERENCES:

YOU CAN NOT LIST FORMER EMPLOYERS OR RELATIVES

NAME	ADDRESS	YEARS KNOWN	OCCUPATION

80

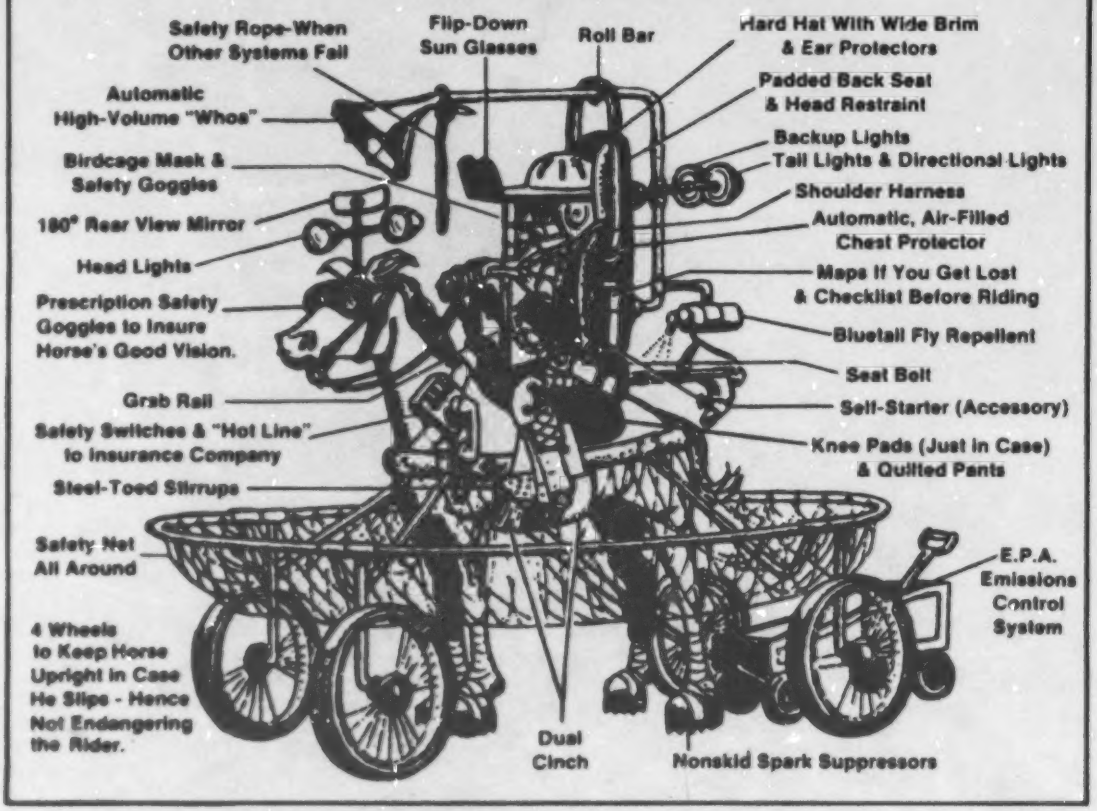
Applicant's signature _____ Date _____

The Occupational Safety and Health Act is NO LAUGHING MATTER

The Occupational Safety and Health Act was passed by congress in 1970. The law is more commonly known as OSHA. It was made to guarantee safe and healthy working conditions for workers. The law set up job safety and health rules that companies must follow. The law requires the following:

(1) A safe working area.
(2) Safe equipment to operate.
(3) Safe tools for the worker.
(4) Precautions for handling hazardous materials.
(5) Material handling equipment.
(6) Fire protection and prevention.
(7) Safety and eye protection.

THE OSHA-EQUIPPED COWBOY


Safety Rope-When Other Systems Fail
Flip-Down Sun Glasses
Roll Bar
Hard Hat With Wide Brim & Ear Protectors
Padded Back Seat & Head Restraint
Automatic High-Volume "Whoa"
Backup Lights
Tail Lights & Directional Lights
Birdcage Mask & Safety Goggles
Shoulder Harness
180° Rear View Mirror
Automatic, Air-Filled Chest Protector
Head Lights
Maps If You Get Lost & Checklist Before Riding
Prescription Safety Goggles to Insure Horse's Good Vision.
Bluetail Fly Repellent
Seat Belt
Grab Rail
Self-Starter (Accessory)
Safety Switches & "Hot Line" to Insurance Company
Knee Pads (Just in Case) & Quilted Pants
Steel-Toed Stirrups
Safety Net All Around
E.P.A. Emissions Control System
4 Wheels to Keep Horse Upright in Case He Slips - Hence Not Endangering the Rider.
Dual Cinch
Nonskid Spark Suppressors

Check-Out Activity

EXPLAINING FUNCTIONS OF INDUSTRIAL RELATIONS PERSONNEL

Answer the following questions. USE YOUR OWN PAPER.

1. Name 7 (of 9) functions of industrial relations.
2. Describe 4 specific duties performed by industrial relations personnel.
3. List 5 provisions of the Occupational Safety and Health Act.

Check-Out Activity

EXPLAINING FUNCTIONS OF INDUSTRIAL RELATIONS PERSONNEL

1. Name 7 (of 9) functions of industrial relations.

   a. Employment
   b. Training
   d. Salaries
   e. Benefits
   f. Labor Relations
   g. Public Relations
   h. Safety
   i. Services

2. Describe 4 specific duties performed by industrial relations personnel.

   a. (See Instruction Sheet I in the student Task Assignment Sheet.)

3. List 5 (of 7) provisions of the Occupational Safety and Health Act.

   a. A safe working area
   b. Safe equipment to operate
   c. Safe tools for the worker
   d. Precautions for handling hazardous materials
   e. Material-handling equipment
   f. Fire protection
   g. Eye safety

APPENDIX

VOCABULARY LISTING

Consumer - a person who buys products and services for his/her own needs and not for resale.

Expertise - the skill and knowledge of an expert.

Flow chart - a diagram showing the progress of work in the order in which each operation occurs in the production process.

Liable - having a duty or obligation enforceable in court against you by another person.

Operation process chart - a list of all operations that must be completed which are numbered in the proper sequence and include symbols for each operation.

Research analyst - a person who examines, studies, and investigates in detail in order to determine the course of action.

Stock - Shares of ownership in a corporation.

Survey - a detailed study or inspection.

PRACTICAL ARTS VIDEOTAPES

These videotapes are available through the Kentucky Department of Education, Office of Research and Planning, Division of Materials and Curriculum, 19th Floor, Capital Plaza Tower, Frankfort, Kentucky 40601; Telephone: (502) 564-2000.

Agribusiness, Natural Resources and Environmental Occupations

"Coal: Kentucky's Ace in the Hole": 1/2-inch color cartridge; 23 minutes; some on 1/2-inch reel-to-reel; 2 copies on 3/4-inch cassette. Describes types of occupations available in the coal industry and discusses useful coal by-products.

"Wildlife": 3/4-inch color cassette; 25 minutes. Explains the role of wildlife in conservation.

"Energy Careers": 1/2-inch color cartridge; 15 minutes; some on 1/2-inch reel-to-reel; 2 copies on 3/4-inch cassette. Explores careers in the alternative energy areas of solar energy, wind, and coal liquification.

"Agribusiness": 3/4-inch color cassette; 18 minutes. Deals with careers in agriculture and other farm-related careers.

Business and Office Occupations

"The Secretary": 3/4-inch cassette; 18 minutes. Identifies various careers available in the secretarial field.

Communications and Media Occupations

"One Moment, Please": 1/2-inch color cartridge (2 cartridges available); 18 minutes. Explores occupations, ranging from camera operator to producer, available in radio and television production and necessary qualifications.

"Number, Please": 3/4-inch color cassette; 18 minutes. Discusses careers available in the telephone industry and shows on-the-job interviews for jobs in the industry.

"Roll the Presses": 3/4-inch cassette; 19 minutes, 20 seconds. Gives overview of careers needed to produce a newspaper.

Construction Occupations

"Construction Careers": 1/2-inch color cartridge; 20 minutes; some on 1/2-inch reel-to-reel; 2 copies on 3/4-inch cassette. Explores types of occupations, including carpenters, electricians, and plumbers, in construction careers and necessary skills needed for these careers.

Home Economics Occupations

"Gainful Home Economics": 3/4-inch color cassette; 20 minutes, 45 seconds. Describes occupations related to home economics in which people are gainfully employed.

Health Occupations

"RX Good Health": 1/2-inch color cartridge; 23 minutes; 2 copies on 3/4-inch color cassette. Explores health careers, such as medical secretary, laboratory technician, and physical therapist, in addition to doctor and nurse.

Hospitality and Recreation Occupations

"Hospitality Unlimited": 1/2-inch cartridge tape; 16 minutes; color; also on 1/2-inch reel-to-reel; 2 copies on 3/4-inch cassette. Indentifies careers in the restaurant industry and hotel/motel management.

Manufacturing Occupations

"Down the Assembly Line": 3/4-inch cassette; 18 minutes. Depicts production line workers on the job; introduces students to the division of labor system whereby each worker becomes skilled in a single operation.

Orientation to the World of Work

"The Rest of Your Life": 2/4-inch cassette; 30 minutes. Introduces students to step-by-step procedures necessary in seeking employment.

Personal Service Occupations

"Barbering and Cosmetology": 3/4-inch cassette. Explores careers available in these two areas.

Public Service Occupations

"Dear John Mail": 1/2-inch color cartridge; 20 minutes; 2 copies on 3/4-inch color cassette. Explores the types of postal careers and available postal facilities.

"Law Enforcement": 3/4-inch color cassette; 25 minutes. Presents occupations available in law enforcement careers, ranging from policeman to radio operator, and their functions; also identifies necessary qualifications for entering the occupations.

"The Military": 3/4-inch cassette; 17 minutes, 30 seconds. Gives students an overview of various careers associated with the military.

Transportation Occupations

"Tracking A Trucker": 1/2-inch cartridge tape; 22 minutes; color; some on 1/2-inch reel-to-reel; 2 copies on 3/4-inch cassette. Explores occupations needed to support the trucking industry from mechanic to driver.

"The People of the Airlines": 3/4-inch cassette; 22 minutes. Shows people on the job at the airport and on the airplane.

REFERENCES APPROPRIATE FOR CAREER EXPLORATION

Documents

Exploring Careers, 1979
Bulletin 2001
Bureau of Labor Statistics
1371 Peachtree Street, N.E.
Atlanta, GA 30309
Telephone: (404) 881-4418

Occupational Outlook Handbook
Bulletin 1955
Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
(Cloth Cover) Stock No. 029-001-02067-8
(Paper Cover) Stock No. 029-001-02059-7

Dictionary of Occupational Titles
Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
Stock No. 029-013-00079-9

Sources of Information

Practical Arts Unit
Bureau of Vocational Education
21st Floor
Capital Plaza Tower
Frankfort, KY 40601
Telephone: (502) 564-3472

Gregg/McGraw-Hill
Webster Division
1221 Avenue of the Americas
New York, NY 10020

McKnight Publishing Company
Bloomington, IL 61701

New Jersey Vocational Technical
Curriculum Laboratory
Rutgers University
4103 Kilmer Campus
New Brunswick, NJ 08903

Ohio Department of Education
Division of Vocational Education
Career Development Service
Columbus, OH 43215

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

Xerox Educational Publications
P.O. Box 16629
Columbus, OH 43216

ADDRESSING STUDENTS WITH SPECIAL NEEDS

Some students may need special help in achieving competencies. Ideas are presented here for helping identify those students and modifying materials and techniques to help them succeed.

Identifying Students with Special Needs

Generally speaking, those students who cannot succeed in the regular vocational education programs without special help are termed "students with special needs" (Vocational Education Act of 1963 and Amendments). Persons most likely to be identified as students with special needs are the academically and economically disadvantaged and the handicapped--the mentally retarded, deaf and hard of hearing, speech impaired, emotionally disturbed, orthopedically (physically) impaired, health impaired, and learning disabled.

The handicapped are further identified as those (1) with a physical or mental disability that substantially impairs one or more major life activities--walking, seeing, hearing, speaking, working, or learning; (2) who have a record or history of such impairment or condition; and (3) who are regarded as having an impairment (Rehabilitation Act of 1973). Women, minorities, the limited English speaking, and others likely to be underemployed or striving for equal opportunity in employment when meeting the criteria for academic or economic deprivation, are specifically identified in the disadvantaged group to be given special help.

Formulating a Basic Approach to Teaching

Society recognizes the right of every individual to an appropriate education, and the law mandates giving persons with special needs an equal chance. In brief:

1. The Vocational Education Amendments of 1976 give special emphasis to developing and providing programs of vocational education for "those with special educational handicaps" and reserves moneys to do so.

2. The Education for All Handicapped Children Act of 1975 assures that all handicapped children between the ages of three to twenty-one have available to them a free, appropriate public education which relates to their unique needs and is provided in the least restrictive environment.

3. The Rehabilitation Act of 1973 prohibits discrimination on the basis of handicap in any program or activity receiving federal financial assistance and directs employers to take affirmative action in hiring handicapped people.

4. The Education Amendments of 1972 prohibit discrimination on the basis of sex in educational programs receiving or benefiting from federal financial assistance.

5. The Civil Rights Act of 1964 prohibits discrimination in employment on the basis of sex, race, color, religion, or national origin in any program or activity receiving federal financial assistance--including training for employment.

We must, then, provide equal opportunity to learn in our instructional processes.

Basically, an approach to teaching which recognizes individual differences in all students provides the best atmosphere for disadvantaged and handicapped students. This approach allows students to work at different rates; involves large group, small group, and individual instruction; incorporates a variety of instructional materials, media, and teaching techniques; and involves a variety of learning activities--reading, doing, discussing, listening, viewing, experiencing, sharing, cooperating, relating, using the senses, etc. It gives disadvantaged and handicapped students the dignity of exploring, learning, and facing the same experiences and responsibilities as other students, without limiting their possibilities by stereotyped concepts of what they can or cannot do.

It involves being organized, with students completely familiar with the teaching/learning plan. When beginning a CBVE class, for example, explain what learning to attain competencies means, how the students will carry out their work, how to use the modules, where to find materials, how and when tests will be given, how "passing" or achieving competency is determined, and what your role as a teacher is.

It also means teacher direction for those students who are not self-directed learners--those with poor academic backgrounds who thrive on teacher interaction and need immediate feedback, instruction simplified, procedures modified, social development as well as specific job skills, role models, or other special aid. For these students, the learning activities described in the modules may become the teacher's lesson plan and be utilized in large-group and small-group settings before the individual student attempts doing learning activities alone. The teacher-directed class might proceed as follows: teacher introduction to tasks to be performed by module or cluster of modules, explanation of what is to be learned and why, presentation of information in small chunks, demonstrations, student tryout and practice, time for questions and answers, trial test followed by reteaching, and evaluation. The teacher will employ a variety of strategies to address the learning needs and styles of the student.

Using Special Strategies

In order to determine the most appropriate teaching strategies, assess the students for kinds of special help required, and develop a plan for meeting any unique needs. Refer to Mainstreaming Guidebook for Vocational Educators by Dahl, Appleby, and Lipe (Olympus Publishing Company, Salt Lake City, Utah 84105), for modifications and general classroom strategies for meeting the unique needs of the different handicapped populations.

Also, enlist the advice and help of employers, support personnel, and agencies and organizations serving disadvantaged and handicapped populations in your school system and geographic area.

Redirecting Teaching Strategies Usually Used

Many of the strategies usually used with regular students may be redirected or modified and also provide effective learning activities for students with special needs. An explanation of how this many be done follows.

AUDIO-VISUALS (films, filmstrips, slide/tape presentations, videotapes, and ETV and commercial television programs). The combination of sight and sound provides more effective communication than either sight or sound alone. Audio-visuals may be used to supplement or replace other methods of presenting information. The hearing impaired will require captioning, signing, or a printed script written at the appropriate reading level or presenting only essential details. The visually impaired may glean information from the sound source, but additional explanation will need to be provided for any visual display of information which is not explained adequately by the narration. Some audio-visual presentations, particularly 8 mm and 16 mm films, may move too fast for the information to be grasped and need to be evaluated with this in mind.

CONTACT WITH WORK ENVIRONMENT. Handicapping conditions, limited finances, geographic isolation, cultural difference, limited communication skills, and social isolation have caused disadvantaged and handicapped persons to have little contact with the world of work. Familiarity with the work setting in which a particular job takes place, relationships with other workers, business use of the telephone, relationship of one's job to other jobs in the same business are just a few examples of areas where special students may require special exposure by means of field trips, spending a day on the job, viewing films, or having additional training sessions.

Note: For those with physical impairments, field trips, on-site job observations, and work experience opportunities will be limited to "accessible" businesses in the community. Before deciding where to go, determine whether the facilities are accessible.

DEMONSTRATION AND TRYOUT. Demonstration by the teacher, experienced workers, and previously-trained students provide reliable role models for learners. Steps, procedures, precautions, physical manipulation, and techniques are imprinted visually in the order and at the time they should occur in task performance. Immediate tryout of the task following the demonstration or an immediate attempt of each step, technique, or procedure as it is demonstrated provides students direct involvement, permits correction and clarification, and promotes retention. Tryout also identifies areas in performance steps, techniques, tools, and work environment where handicapped students need to have modification in order to perform tasks and meet industry standards.

ELIMINATION OF STEREOTYPING. Disadvantaged and handicapped people face more than the sex role stereotyping myths in their quest for employment. The following are just a few examples: "Deaf people are dumb." "The best job for blind people is tuning pianos." "He'll never be able to do that; he's a cripple." "Mr. _____ was no good; neither is his son." "She can

never do that; her parents didn't go to college." In addition to overcoming the unfounded assumptions of others, disadvantaged and handicapped persons often have equal misconceptions about themselves thinking: "I can never do that." "_____, who is deaf, does assembly line work; that's what I'll do, too." "I'll never be anybody."

Overcoming stereotyping may begin with using sex fair instructional materials and media, exploring interests and abilities, exploring two or three nontraditional jobs, or complimenting accomplishments. It may include planning how to reach an educational goal, providing role models (a person with a like handicap or socioeconomic background who has succeeded), as well as observing persons in nontraditional work roles. It means doing whatever raises aspirations and increases self-worth. It means attempting to eliminate underemployment.

EMPLOYER INVOLVEMENT. Programs with employer input are more practical and in line with the current needs of the job market. Employers who make input feel a special kinship to the program and get a chance to see the students before meeting them in the job market.

For disadvantaged and handicapped students, employer involvement offers a very special opportunity to remove common misconceptions about their capabilities. It enables employers to help with any modification needed, see students performing tasks, and observe how the students relate to others. It gives students a chance to prove that they can do the work, that they will not endanger themselves or others, and that they will not increase expenses. These are major employer concerns. Both students and teachers should be prepared to provide reassuring answers and evidence to show there is no more risk than with the nonhandicapped.

Employers may be involved by giving class presentations; giving suggestions for program improvement and modifications; conducting mock interviews; and providing work experience, observations, worker interviews, job analysis, etc.

HANDS-ON EXPERIENCES, PROBLEM SOLVING, PERSONAL INVOLVEMENT (work samples, tryout exercises, games, role playing). Being involved in a sample of work through completing a product, performing related paper work, or role playing interpersonal relationships on the job keeps students interested, holds attention to the learning tasks, and injects the realities of working and job performance in the teaching/learning situation. It makes the student feel that the instruction is practical and valuable. Accomplishment means "qualified for work"--a great boost to self-esteem for those who doubt self-worth.

The instructor and other students should avoid taking over when handicapped students are awkward or slow in completing a task. The student cannot master the skill if someone else does it.

ILLUSTRATIONS (pictures, graphs, bulletin boards, transparencies, and other visuals). The disadvantaged, the mentally retarded, and the hearing impaired, particularly, are especially oriented to visual methods of learning. Other students, with the exception of the blind and some visually impaired, will appreciate visual presentation of information to

be learned. Student handouts, with the steps to a task illustrated and briefly and simply explained, are especially helpful. Captioning and brief explanations are important supplements. Many illustrations may be adapted for the visually impaired by making them tactile (so that they can be felt). Sometimes enlarged print and bold outlines help.

INTERACTION; INDEPENDENCE. Economic deprivation, geographic isolation, cultural isolation, and restrictions on mobility and social relationships imposed by physical impairments have limited the experiences of the disadvantaged and the handicapped in the community at large. Many have no previous work experience, little observation of the worker's daily routine, and limited social experiences. They have been sheltered at home, absent from the scene, and at best, onlookers.

So that they will not continue in this role after vocational training, experiences in the community and involvement with nonhandicapped people and other students are of utmost importance. These students, as well as their families and the working community, need proof that they can function independently and competently. They need to establish contacts who can serve as references to recommend them as competent workers who can relate to others.

Field trips, worker interviews, cooperative work experience, spending a day on the job, giving talks before civic groups are, therefore, important to the acclimation of disadvantaged and handicapped students to the world of work. Participating in team work projects with other students; pairing with a slower or faster learning peer; pairing with a nonhandicapped, a nondisadvantaged, or person from another race or culture will help achieve faster comprehension and understanding and promote learning communication skills. Teaching special units dealing with related communication and social skills will also be necessary; for example: office etiquette, relationships with employer and other employees, daily work expectations which are not direct task performance, telephone skills, appropriate dress and grooming habits, to name a few.

LISTENING (explaining, discussing, reacting orally). Learning by listening is an important tool to the disadvantaged, the visually impaired, the speech impaired, the learning disabled, and others who "prefer to be told" or "have to be told" rather than read about it.

The visually impaired require identification of familiar sounds in the work place to determine location of different work areas, equipment functions, and hazards. The hearing impaired require sight substitutions, such as indicator lights, for critical sounds they cannot hear. They may use lip reading, interpreting, and sound conduction or amplification devices. The retarded need to become accustomed to the sounds of the work place so that they can work without being distracted. The speech impaired need to be given the right to listen although they may have trouble participating, or may not be able to participate orally.

When information is presented for listening, instruction in how to listen (what to listen for) is important. An outline of the information presented, supplemented by visuals, tryout exercises, showing, completion

of a guidesheet questions to be answered, analysis of cases or problem situations, or other application activities will enhance use and retention of information heard.

Listening is a vocational skill as well as a learning skill. Workers must be able to receive information by listening as well as provide information for listening. Most on-the-job instruction is given orally. Explanation must be given to and received from customers, co-workers, and supervisors.

READING HELPS. Being fluent in the technical vocabulary or language of the job and able to read at the level required by the job is a part of occupational competency. On-the-job reading requirements may vary from the reading of signs to following instructions given in technical manuals. The instruction given in reading, then, for vocational purposes, will depend on the reading skills possessed by the student and the reading requirements of the job. Whether or not a supplemental class in remedial reading is offered, the vocational instructor will find that providing reading aids also helps provide job skill.

Braille materials, large print textbooks, magnifying devices, and recordings may be provided for the visually impaired. Materials may be simplified or outlined for the hearing impaired and others with limited language skills. The native language may be supplied above the English for critical information in textbooks used by the limited English-speaking. Familiarity with the setting in which the printed information is applied may be given via field trips, demonstrations, or films to make reading easier and more meaningful.

Students with exceptional reading problems may require the help of a special reading teacher or be enrolled in a remedial reading program. Some schools employ vocational reading teachers to assist vocational students with developing vocational reading skills and doing the reading required in their programs.

RECORDING AND RECORDINGS (tapes, records, radio programs). Information may be presented and gained by listening to recorded information rather than reading. This strategy will aid the nonreader, the poor reader, the visually impaired, the learning disabled, and others through use as a variation of teaching technique. Recording is also a useful tool for the deaf in notetaking; the recording script may be transcribed into print later by a hearing individual. It will also provide instruction for those who have missed initial classroom presentation of information or who need review. Recordings may be supplemented by slides and pictures.

RELATED MATH. Competency in math, like competency in reading, is more critical to some jobs than to others. Math is best taught in relation to the task of which it is a part. This instruction should incorporate basic math and remedial math instruction as needed. A cooperative or team teaching effort with the math teachers or related math instructors in the school will relieve the burden on the vocational instructor. Enough practice and application exercises should be provided to insure retention of the math operations involved. It is helpful to compile a list of the

math competencies needed to complete the training program, prepare an assessment test to determine student skills, and plan in the beginning a program which the student can follow to attain the basic math competencies prerequisite to the course. If the skills cannot be acquired simultaneously to the job skill training program, the student should postpone entry into the course until the prerequisite skills are attained. It may be necessary to prepare a special manual and modules to provide the related math instruction.

REMEDIAL AND RETENTION EXERCISES. Doing learning activities does not necessarily make students occupationally competent. Performance must be observed, misunderstandings clarified, procedures and techniques corrected, and repetition called for at a future time. Lesson planning should anticipate theory and tasks with which students are likely to have difficulty, include additional practice exercises, and provide alternate approaches to teaching. Repetition for retention should be provided, such as repetition of information in different media presentations or use of different types of application exercises. Review sessions, keeping notebooks, completing work samples, doing live work, and solving cases will also help.

SAFETY. The Occupational Health and Safety Act has increased employer concern for safety and underscored the importance of providing safety instruction along with task performance. It is especially important for the handicapped in two ways: (1) to overcome employer concern about the handicapped person's ability to take care of himself/herself and not endanger the lives of others; (2) to identify and deal with situations which are hazardous for persons because of particular handicaps.

To meet these needs for safety instruction, the handicapped student not only needs the basic or general safety instruction related to the occupation but safety instruction or special safety provisions needed for a person with his/her particular handicap. An example is the installation of a blinking light to tell a person who is deaf that the equipment is running.

Note: The Kentucky Department of Labor, Occupational Safety and Health Program, Division of Education and Training, Frankfort, Kentucky 40601, Phone: (502) 564-6895, offers training programs to help vocational instructors teach safety.

SUPPORT SERVICES. Some students will require emotional, social, and financial support in order to succeed in the instructional programs. Others will need career counseling and special assistance in becoming employed. Government agencies, special schools, special personnel, and organizations for disadvantaged and handicapped persons can provide this help. The following are examples and should not be considered an all-inclusive list: resource room teachers, rehabilitation counselors, guidance counselors, tutors, remedial teachers, instructors in special schools, occupational therapists, diagnostic specialists, media personnel, handicapped workers, workers who are members of a minority group, social workers, and others who can serve as role models. Survey the community to identify persons who serve the needs of disadvantaged and handicapped persons in your area and incorporate their assistance in related learning activities.

UNIQUE MODIFICATIONS (modified equipment, tools, learning aids, changes in work environment, adaptations in course or training program content). Some students require special help in meeting physical job requirements. When considering modification, it is important to concentrate on what the student can do. If at all possible, enable the student to function in the work environment as it is usually found. Employers look favorably on handicapped persons with this kind of preparation.

Rehabilitation centers; organizations and schools for the blind, deaf, dyslectic, disabled, and the mentally handicapped; and publishers and manufacturers of special instructional materials, aids, and equipment can offer aid in meeting unique needs. Consultation with special education personnel and rehabilitation counselors is a good starting point. The student should also be asked to make suggestions.

Care should be taken to insure occupational competency. Prospective employers should be shown how the modification operates in the work setting and how it increases efficiency.

The previously described list of strategies is not exhaustive. Others may be added. All will need to be directed toward the occupation for which training is being given, the students enrolled, the availability of instructional materials, and the community. It is also important to remember that what works well for one group of students or a particular student will not necessarily work well for another.

PRACTICAL ARTS

MANUFACTURING EXPLORATION

Task Assignment Sheets PA-MA 1-10

Practical Arts

MANUFACTURING EXPLORATION

TASK: USING MEASURING AND LAYOUT TOOLS

INTRODUCTION

Layout is measuring and marking materials to the proper design and correct size. Measuring is one of the essential skills used in laying out and cutting materials. Often the quality of work depends upon the skill with which the measuring and layout tools are used. In this task assignment sheet, you will learn the names of these tools and how they are used.

OBJECTIVE

(1) GIVEN a display of the basic layout and measuring tools,

IDENTIFY THE NAME OF EACH TOOL.

YOU SHOULD identify all the tools correctly.

(2) GIVEN basic layout and measuring tools and a list of problems,

USE THE TOOLS TO COMPLETE EACH PROBLEM.

YOU SHOULD complete at least 90% of the problems correctly.

LEARNING ACTIVITIES

1. READ about and STUDY the illustrations of the basic layout and measuring tools. Your teacher will provide a reference. DISCUSS how each tool is used.

2. EXAMINE a display of layout and measuring tools.

3. PREPARE a poster of illustrations of layout and measuring tools.

4. WATCH your teacher demonstrate how to use each layout and measuring tool.

5. PRACTICE using layout and measuring tools.

6. ARRANGE with your teacher to complete this task by going through the CHECK-OUT Activities.

CHECK-OUT ACTIVITIES

(1) Your teacher will provide a display of measuring and layout tools. Write the name of each tool.

(2) Your teacher will provide problems that require using measuring and layout tools. Complete each problem.

The development of this material is the result of a cooperative effort between the Bureau of Vocational Education and the Office of Research and Planning, Kentucky Department of Education. The Kentucky Department of Education does not discriminate on the basis of race, color, national origin, age, religion, marital status, sex or handicap. This publication was printed with state funds.

INSTRUCTOR'S FINAL CHECKLIST

USING MEASURING AND LAYOUT TOOLS

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

	Accomplished	Not Accomplished
1. In identifying measuring and layout tools, the student wrote the correct name of each tool	[ ]	[ ]
2. In completing the fourteen problems requiring the use of layout and measuring tools, the students completed at least twelve problems correctly	[ ]	[ ]

Practical Arts

MANUFACTURING EXPLORATION

TASK: USING WOODWORKING HANDTOOLS

INTPODUCTION

Wood is frequently used in manufacturing occupations. The worker uses woodworking hand tools to cut, form, and shape wood into pleasing and desirable objects. In this task assignment sheet, you will learn how to use some basic woodworking hand tools.

OBJECTIVES

(1) GIVEN a display of basic woodworking hand tools,

IDENTIFY EACH TOOL.

YOU SHOULD identify all of the tools correctly.

(2) GIVEN basic woodworking hand tools and problems requiring the use of the tools,

USE THE TOOLS TO COMPLETE THE PROBLEMS.

YOU SHOULD complete at least 90% of the problems correctly.

LEARNING ACTIVITIES

1. READ about woodworking hand tools. Your teacher will provide a reference. DISCUSS the information.

2. MAKE a list of wood articles you have at home that required the use of hand tools.

3. EXAMINE a display of woodworking hand tools. LISTEN to your teacher explain the use of each tool.

4. WATCH your instructor demonstrate the correct and safe operation of woodworking hand tools.

5. PRACTICE using woodworking hand tools.

6. ARRANGE with your instructor to complete this task by going through the CHECK-OUT ACTIVITIES.

CHECK-OUT ACTIVITIES

(1) Your teacher will display basic woodworking hand tools. Write the name of each tool.

(2) Your teacher will provide some basic woodworking hand tools and problems requiring the use of the tools. Complete each of the problems.

The development of this material is the result of a cooperative effort between the Bureau of Vocational Education and the Office of Research and Planning, Kentucky Department of Education. The Kentucky Department of Education does not discriminate on the basis of race, color, national origin, age, religion, marital status, sex or handicap. This publication was printed with state funds.

INSTRUCTOR'S FINAL CHECKLIST

USING WOODWORKING HAND TOOLS

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

	Accomplished	Not Accomplished
1. The student identified all the tools displayed correctly	[ ]	[ ]
2. The student completed at least ten of the twelve problems correctly	[ ]	[ ]

Practical Arts

MANUFACTURING EXPLORATION

TASK: DEFINING THE BASIC ELEMENTS AND PRINCIPLES OF DESIGN

INTRODUCTION

Designing is the process of developing an idea into a plan. In industry, designing plays an important part of the research and development stage of a product. As the result of design, a useful product is manufactured. In this task assignment sheet, you will learn the basic elements and principles of design and how to use them.

OBJECTIVES

(1) GIVEN a test on requirements, elements, and principles of design,

COMPLETE THE TEST.

YOU SHOULD complete the test with 90% accuracy.

(2) GIVEN a ruler, pencil, graph paper, templates, markers, compass, and French curve,

DESIGN A PRODUCT.

YOUR DESIGN should include each of the four basic shapes of lines and all of the elements and principles of good design.

LEARNING ACTIVITIES

1. READ about the elements and principles of design. Your teacher will provide a reference.

2. LISTEN and OBSERVE as your teacher explains and shows examples of the three major design requirements.

3. MAKE a folder on the five elements of design. GIVE an example and IDENTIFY each element.

4. STUDY and DISCUSS Instruction Sheet I, BASIC SHAPES OF DESIGN. LISTEN to your teacher explain how the four basic shapes of lines are used in design.

LEARNING ACTIVITIES

5. STUDY and DISCUSS Instruction Sheet II, COLORS. FIND examples of designs using color combinations.

6. MAKE a poster illustrating the six basic principles of design. WORK with a small group of classmates.

7. PRACTICIPATE in an activity to demonstrate the technique of designing a product. Your teacher will tell you more about this activity.

8. READ and DISCUSS Instruction Sheet III, IMPROVING PRODUCT DESIGN. MAKE a design that would be different from the ordinary.

9. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITIES.

CHECK-OUT ACTIVITIES

(1) Your teacher will provide a test on requirements, elements, and principles of design. Complete the test.

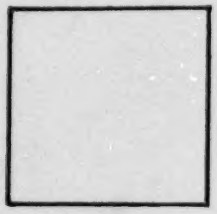
(2) You will be provided the necessary tools and supplies. Design a product.

The development of this material is the result of a cooperative effort between the Bureau of Vocational Education and the Office of Research and Planning, Kentucky Department of Education. The Kentucky Department of Education does not discriminate on the basis of race, color, national origin, age, religion, marital status, sex or handicap. This publication was printed with state funds.

INSTRUCTION SHEET I

BASIC SHAPES OF DESIGN

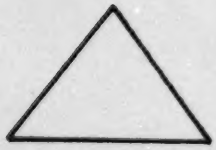
DESIGN



SQUARE

CIRCLE

RECTANGLE



TRIANGLE

INSTRUCTION SHEET II

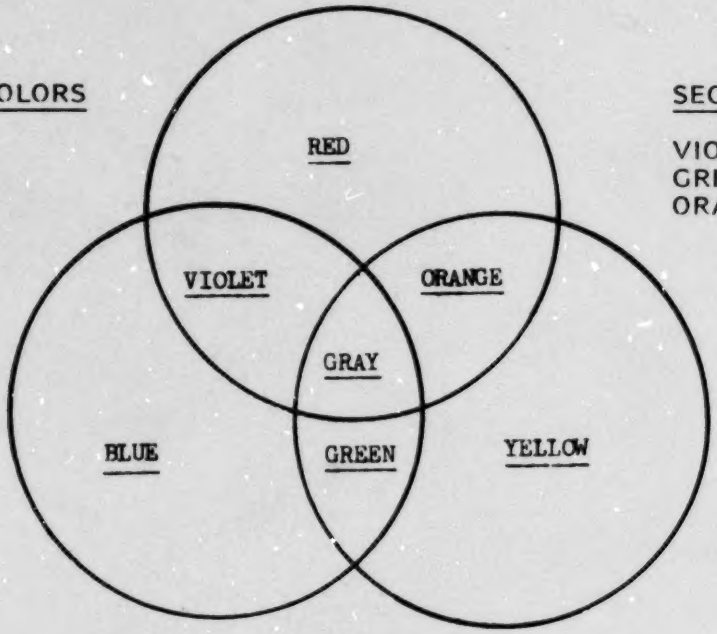
COLORS

PRIMARY COLORS

RED
BLUE
YELLOW

SECONDARY COLORS

VIOLET
GREEN
ORANGE



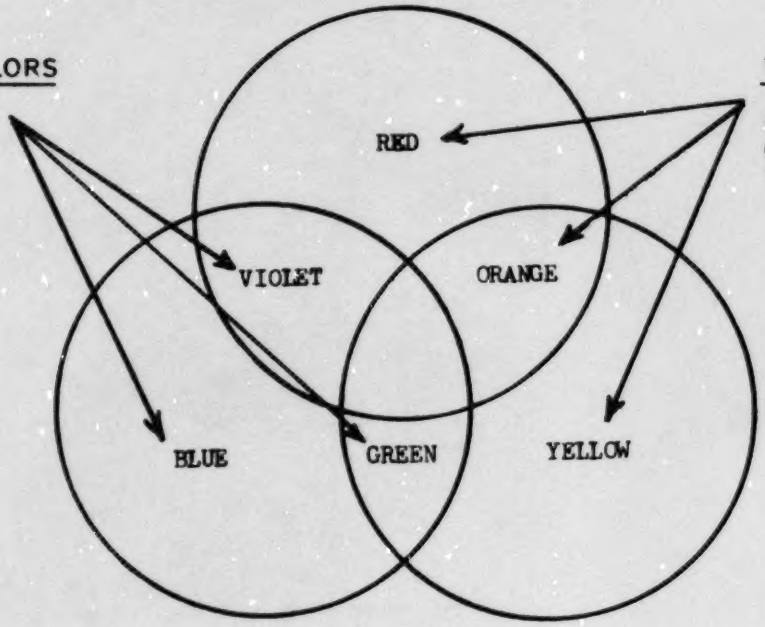
Combination of primary colors produces - GRAY

COOL COLORS

VIOLET
BLUE
GREEN

WARM COLORS

RED
ORANGE
YELLOW



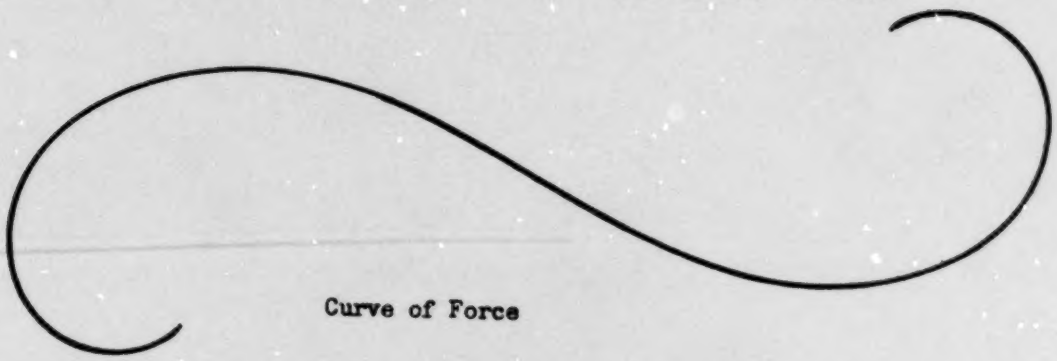
INSTRUCTION SHEET III

IMPROVING PRODUCT DESIGN

Designers often try to improve the design of many familiar products; for instance, a Mr. Bennett has designed new shape handles for brooms, hammers and other tools. He discovered that bent handles make the products easier to use.

Some of the shapes below are used to redesign existing products.

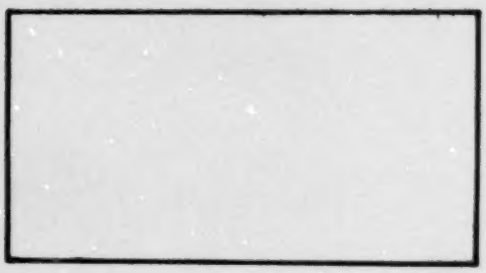
FORM FOLLOWS FUNCTION



Curve of Force

Ellipse

Rectangle



INSTRUCTOR'S FINAL CHECKLIST

DEFINING THE BASIC ELEMENTS AND PRINCIPLES OF DESIGN

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

	Accomplished	Not Accomplished
1. The student completed the test with 90% accuracy	[ ]	[ ]
2. The student's design included:		
a. Each of the four basic shapes of lines	[ ]	[ ]
b. All of the elements and principles of good design . . .	[ ]	[ ]

Practical Arts

MANUFACTURING EXPLORATION

TASK: DESIGNING A PLASTIC PRODUCT

INTRODUCTION

Plastic is one of the most widely used materials in the manufacturing industry. This material is strong, lightweight, and flexible. It can be molded into many shapes. For this reason, the designer must know how to design products that are to be made from plastic. In this task assignment sheet, you will learn how to design a plastic product.

OBJECTIVE

GIVEN a design style, the necessary designing supplies, and modeling clay,

DESIGN A PLASTIC ICE SCRAPER, AND MAKE A CLAY MODEL.

YOUR DESIGN should be drawn to the proper scale and match the design style. YOUR CLAY MODEL should be true to your design.

LEARNING ACTIVITIES

1. READ about plastic. Your teacher will provide a reference.

2. WRITE the definition of "plastics." LIST five occupations found in the plastics industry.

3. COLLECT samples of plastic products, and BRING them to class. IDENTIFY the features of each product.

4. LISTEN and OBSERVE as your teacher discusses thermoplastic and thermosetting plastic.

5. PARTICIPATE in a discussion of the five types of plastics and their uses. IDENTIFY the types of plastics used in the products collected in Learning Activity 3.

LEARNING ACTIVITIES

6. FIND pictures of wood, rubber, and metal products. FIND pictures of the same products made of plastic. COMPARE the products. DISCUSS why each plastic product needs the qualities of the plastic from which it is made.

7. EXAMINE and DISCUSS the designs in Instruction Sheet I, DESIGNING A PLASTIC ICE SCRAPER.

8. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

Your teacher will provide the necessary supplies. Choose one of the designs in Instruction Sheet I, and draw the design on graph paper. Make a clay model of your design.

The development of this material is the result of a cooperative effort between the Bureau of Vocational Education and the Office of Research and Planning, Kentucky Department of Education. The Kentucky Department of Education does not discriminate on the basis of race, color, national origin, age, religion, marital status, sex or handicap. This publication was printed with state funds.

Style I

Use of 1 End

Style II

Use of BOTH ends

Style III

Heated and Formed

INSTRUCTOR'S FINAL CHECKLIST

DESIGNING A PLASTIC PRODUCT

Accomplished	Not Accomplished

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

In designing a plastic product, the student:

1. Drew a design:
   a. To the proper scale ..... [ ] [ ]
   b. That matched the design style ..... [ ] [ ]
2. Made a clay model that was true to the design drawn ..... [ ] [ ]

Practical Arts

MANUFACTURING EXPLORATION

TASK: DEVELOPING A PRODUCTION FLOW CHART

INTRODUCTION

The success or failure of a company depends on how well the production of a product is planned. For this reason, the production engineer decides how the product will be made and how the material will be moved from one station to the other. The plan is then put in the form of a production flow chart. In this task assignment sheet, you will learn how to develop a production flow chart.

OBJECTIVE

GIVEN a flow process chart form, pencil, ruler, templates, and list of products,

CHOOSE A PRODUCT AND DEVELOP AN OPERATION PROCESS CHART AND A FLOW PROCESS CHART FOR THE PPODUCT.

YOUR CHARTS will be rated in accordance with the Instructor's Final Checklist.

LEARNING ACTIVITIES

1. READ about flow charts. Your teacher will provide a reference. DISCUSS the information.
2. LISTEN to your teacher explain the importance of flow charts, how they are used, and how they work.
3. EXAMINE the symbols in Instruction Sheet I, STANDARD FLOW CHART SYMBOLS.
4. EXAMINE the chart in Instruction Sheet II, OPERATION PROCESS CHART FOR BOTTLE OPENER. Also STUDY the chart in Instruction Sheet III, FLOW PROCESS CHART FOR BOTTLE OPENER. LISTEN to your teacher explain these charts.
5. PRACTICE making an operation process chart and a flow process chart. Your teacher will provide a list of activities and a blank flow process chart.
6. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

VOCABULARY

Flow chart - a diagram showing the progress of work in the order in which each operation occurs in the production process.

Operation process chart - a list of all operations that must be completed which are numbered in the proper sequence and include symbols for each operation.

The development of this material is the result of a cooperative effort between the Bureau of Vocational Education and the Office of Research and Planning, Kentucky Department of Education. The Kentucky Department of Education does not discriminate on the basis of race, color, national origin, age, religion, marital status, sex or handicap. This publication was printed with state funds.

CHECK-OUT ACTIVITY

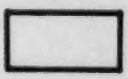
Your teacher will provide a list of products, a blank flow process chart, ruler, and templates. Choose a product and develop an operation process chart and a flow process chart for the production of the product.

INSTRUCTION SHEET I

STANDARD FLOW CHART SYMBOLS

OPERATION ..... The object has changed in appearance or design by chemical or physical means. The object may be assembled or fastened by mechanical means.

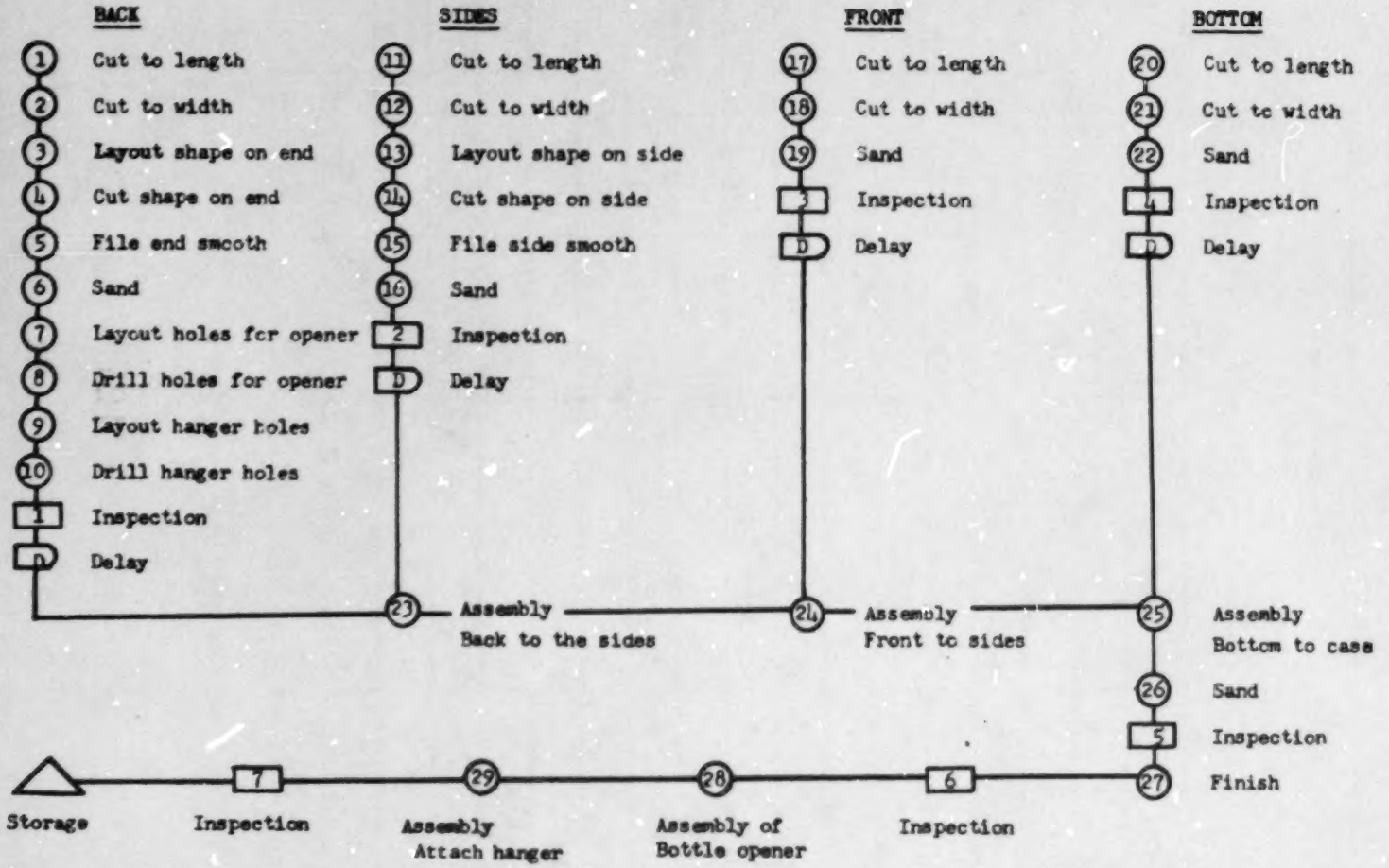
TRANSPORATION .....The object is moved from one location to another.



INSPECTION ..... The quality of the object is checked.

DELAY ..... The object is waiting for the next operation.

STORAGE ..... The object is waiting for the next operation.



OPERATION PROCESS CHART FOR BOTTLE OPENER

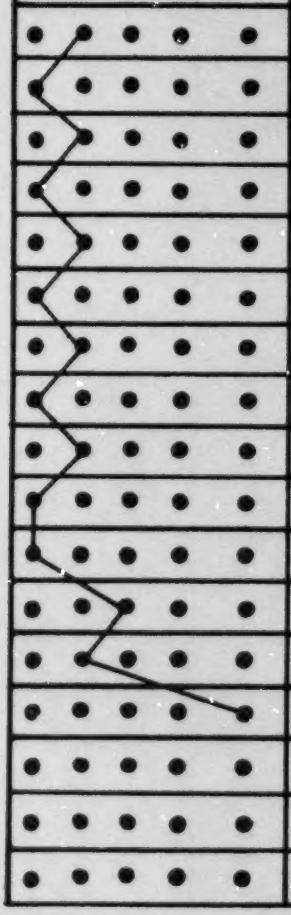
INSTRUCTION SHEET 11

Task Assignment Sheet PA-MA-5

INSTRUCTION SHEET III

FLOW PROCESS CHART

Part Name Bottle opener - Side
Part Number 00011
Operation _____
Date 2/15/83



Description	Distance	Quantity	Time
Move to Radial Arm Saw	8 feet		
Cut to Length		25	15 minutes
Move to Table Saw	12 feet		
Cut to Width		25	15 minutes
Move to Layout Table	6 feet		
Layout shape on end		25	8 minutes
Move to Band Saw	10 feet		
Cut shape on end		25	12 minutes
Move to Work Bench	5 feet		
File ends smooth		25	25 minutes
Sand Surfaces		25	25 minutes
Inspect			
Move to Storage	15 feet		
Store			

○ Operation ⇨ Transportation □ Inspection ⌓ Delay ▽ Storage

INSTRUCTOR'S FINAL CHECKLIST

DEVELOPING A PRODUCTION FLOW CHART

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

Accomplished	Not Accomplished

In developing a production flow chart, each group of students:

1. Developed an operation process chart:
   - a. Listed all operations that must be completed ..... [ ] [ ]
   - b. Listed the operations in proper sequence ..... [ ] [ ]
   - c. Included the correct flow chart symbols for each process ..... [ ] [ ]
2. Developed a flow process chart:
   - a. Showed all the operations, transportation, inspections, delays, and storages ..... [ ] [ ]
   - b. Indicated the correct symbol for each process ..... [ ] [ ]

Practical Arts

MANUFACTURING EXPLORATION

TASK: MASS-PRODUCING A PRODUCT

INTRODUCTION

Over the years, a highly efficient system for making products has developed. It is a mass-production process in which workers assemble a product as the parts move along a slowly moving belt or track. This is called an assembly line. In this task assignment sheet, you will mass-produce a product.

OBJECTIVE

GIVEN a pattern, a Flow Process Chart, and the necessary tools and equipment,

HELP SET UP AN ASSEMBLY LINE AND PARTICIPATE IN MASS-PRODUCING A GOLF TEE GAME.

YOU SHOULD follow the procedure as outlined in the Flow Process Chart and produce the part of the game which your instructor assigns you.

LEARNING ACTIVITIES

1. READ about assembly lines. Your teacher will provide a reference.
2. LISTEN to a lecture on the history and the advantages of assembly lines.
3. SKETCH an assembly line.
4. WRITE a two-page report on the job of an assembler.
5. PRACTICE mass-producing an envelope. Your teacher will provide the necessary supplies.
6. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

You will be provided the necessary materials for producing a golf tee game. Work with a group of students to set up an assembly line and mass-produce the game.

INSTRUCTOR'S FINAL CHECKLIST

MASS-PRODUCING A PRODUCT

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

	Accomplished	Not Accomplished
In mass-producing the golf tee game, the student:		
1. Participated in the assembly line process.....	[ ]	[ ]
2. Followed the procedure outlined in the Flow Process Chart.....	[ ]	[ ]
3. Produced his/her assigned part of the game.....	[ ]	[ ]

Practical Arts

MANUFACTURING EXPLORATION

TASK: CONDUCTING A MARKET SURVEY

INTRODUCTION

Manufacturers conduct market surveys in order to get people's reactions to a new or different product or idea. These surveys help in product planning and production. In this task assignment sheet, you will learn how to conduct a market survey and to analyze the results.

OBJECTIVES

(1) GIVEN a product and a Consumer Survey questionnaire,

CONDUCT A CONSUMER SURVEY.

YOU SHOULD survey at least five classmates and make sure that all questions have been answered.

(2) GIVEN the completed Consumer Survey questionnaire and a Market Research form,

COMPLETE THE MARKET RESEARCH FORM.

YOU SHOULD complete the form with 100% accuracy.

LEARNING ACTIVITIES

1. READ about market surveys. Your teacher will provide a reference. DISCUSS the reasons for conducting surveys.

2. LISTEN to your teacher explain the major methods of conducting surveys. ROLE PLAY a method of conducting a survey, and/or MAKE a poster illustrating one of the methods.

3. BRING a product or a picture of a product to class. EXPLAIN the features of the product.

4. LISTEN to your teacher explain the stages of a product's life cycle. LIST products that have long life cycles and products that have short life cycles.

LEARNING ACTIVITIES (Continued)

5. EXAMINE a Consumer Survey questionnaire. Your teacher will show you one. ANALYZE the questions to determine if they cover the four reasons for conducting a survey. WATCH your teacher demonstrate how to complete the questionnaire.

6. EXAMINE a Market Research form. Your teacher will show you one. WATCH your teacher demonstrate how to summarize and record the results of a consumer survey.

7. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITIES.

CHECK-OUT ACTIVITIES

(1) You will be provided a Consumer Survey questionnaire. Bring a product from home, and have five classmates complete the questionnaire about the product.

(2) You will be provided a Market Research form. Complete the form, using the results of your consumer survey.

The development of this material is the result of a cooperative effort between the Bureau of Vocational Education and the Office of Research and Planning, Kentucky Department of Education. The Kentucky Department of Education does not discriminate on the basis of race, color, national origin, age, religion, marital status, sex or handicap. This publication was printed with state funds.

VOCABULARY

Consumer - a person who buys products and services for his/her own needs and not for resale.

Research analyst - a person who examines, studies, and investigates in detail in order to determine the course of action.

Survey - a detailed study or inspection.

INSTRUCTOR'S FINAL CHECKLIST

CONDUCTING A MARKET SURVEY

	Accomplished	Not Accomplished
Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.		
1. In conducting a consumer survey, the student:		
a. Surveyed five classmates.....	[ ]	[ ]
b. Made sure all questions were answered on the questionnaire.....	[ ]	[ ]
2. In completing a Market Research form, the student completed it with 100% accuracy.....	[ ]	[ ]

Practical Arts

MANUFACTURING EXPLORATION

TASK: COMPOSING A COMPANY NAME AND DESIGNING A TRADEMARK

INTRODUCTION

Careful selection of a company name and trademark may often determine the success or failure of a business. Company names are usually selected: (1) according to the person's name who first had the idea for the product, (2) according to how the business was organized, or (3) for the location in a particular region.

To identify a company, a trademark is designed with a style and mark of its own. A trademark is words, groups of words, or symbol which a company puts on products to distinguish the products from those made by others. In this task assignment sheet, you will compose a company name and design its trademark.

OBJECTIVE

GIVEN the necessary supplies,

COMPOSE A COMPANY NAME AND DESIGN THE COMPANY TRADEMARK.

THE NAME should be easy to remember and indicate the nature of the business. THE TRADEMARK should be easy to read and recognize, suitable for advertising and packaging, timely, and in good taste.

LEARNING ACTIVITIES

1. READ about companies and their trademarks. Your teacher will provide a reference. DISCUSS the information. WRITE the definition of a trademark.

2. LISTEN to your teacher explain why companies are formed.

3. LIST names of companies in your local area, and IDENTIFY the products they sell and/or services they perform. ANALYZE each name: Is it easy to remember? Does it indicate the nature of the business?

4. FIND examples of trademarks, and BRING them to class. ANALYZE each one: Is it easy to read and recognize? Is it suitable for advertising and packaging? Is it timely? Is it in good taste? MAKE a poster or a folder of your examples.

LEARNING ACTIVITIES (Continued)

5. SOLVE a trademark puzzle. Your teacher will provide a copy.

6. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

Identify a product or service, and compose a name for a new company that will offer that particular product or service. Design a trademark for the company.

The development of this material is the result of a cooperative effort between the Bureau of Vocational Education and the Office of Research and Planning, Kentucky Department of Education. The Kentucky Department of Education does not discriminate on the basis of race, color, national origin, age, religion, marital status, sex or handicap. This publication was printed with state funds.

INSTRUCTOR'S FINAL CHECKLIST

COMPOSING A COMPANY NAME AND DESIGNING A TRADEMARK

Accomplished	Not Accomplished

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

In composing a company name and desiging a trademark, the student's:

1.	Company name:		
	a. Was easy to remember.....	[ ]	[ ]
	b. Indicated the nature of the business.....	[ ]	[ ]
2.	Trademark:		
	a. Was easy to read.....	[ ]	[ ]
	b. Was easy to recognize.....	[ ]	[ ]
	c. Was suitable for advertising and packaging.....	[ ]	[ ]
	d. Was timely.....	[ ]	[ ]
	e. Was in good taste.....	[ ]	[ ]

Practical Arts

MANUFACTURING EXPLORATION

TASK: DEFINING THE MAJOR TYPES OF COMPANY OWNERSHIPS

INTRODUCTION

Companies fall under one of three types of business ownerships: proprietorship, partnership, and corporation. In this task assignment sheet, you will learn the structure of each type of ownership and the advantages and disadvantages of each.

OBJECTIVE

GIVEN a pencil-and-paper test on the major types of company ownerships,

COMPLETE THE TEST.

YOU SHOULD complete the test with 90% accuracy.

LEARNING ACTIVITIES

1. READ about the types of company ownerships. Your teacher will provide a reference. DISCUSS the information.

2. LISTEN to your teacher describe each type of ownership. LOOK AT diagrams listing the advantages and disadvantages of each.

3. IDENTIFY local business that fall under each type of ownership.

4. PARTICIPATE with a small group of classmates in writing a brief description of a business. PLAY a game using the description. Your teacher will tell you more about this activity.

5. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

Your teacher will provide a test on major types of company ownerships. Take the test.

VOCABULARY

Expertise - the skill and knowledge of an expert.

Liable - having a duty or obligation enforceable in court against you by another person.

Stock - Shares of ownership in a corporation.

The development of this material is the result of a cooperative effort between the Bureau of Vocational Education and the Office of Research and Planning, Kentucky Department of Education. The Kentucky Department of Education does not discriminate on the basis of race, color, national origin, age, religion, marital status, sex or handicap. This publication was printed with state funds.

INSTRUCTOR'S FINAL CHECKLIST

DEFINING THE MAJOR TYPES OF COMPANY OWNERSHIPS

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

	Accomplished	Not Accomplished
The student completed the test on major types of company ownerships with 90% accuracy.....	[ ]	[ ]

Practical Arts

MANUFACTURING EXPLORATION

TASK: EXPLAINING FUNCTIONS OF INDUSTRIAL RELATIONS PERSONNEL

INTRODUCTION

Nothing is as important to a company as its workers. Industrial relations is the part of the company that deals with getting and keeping these workers. In this task assignment sheet, you will learn about the functions of industrial relations personnel.

OBJECTIVE

GIVEN a pencil-and-paper test on the functions of industrial relations personnel,

COMPLETE THE TEST.

YOU SHOULD complete the test with 90% accuracy.

LEARNING ACTIVITIES

1. READ about industrial relations. Your teacher will provide a reference. DISCUSS the information.

2. LOOK AT a diagram of the functions of industrial relations personnel. Your teacher will show it to you.

3. READ and DISCUSS Instruction Sheet 1, WHAT ARE INDUSTRIAL RELATIONS?

4. ROLE PLAY an industrial relations worker. Your teacher will tell you more about this activity.

5. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

Your teacher will provide a test about the functions of industrial relations personnel. Take the test.

Instruction Sheet I

WHAT ARE INDUSTRIAL RELATIONS?

Industrial relations is the part of a company that deals with people. Industrial relations personnel are concerned with getting and keeping workers. Workers in this area also try to maintain a good relationship between the manufacturing company, its employees, and the community. Industrial relations personnel deal with employment, training, wages, salaries, benefits, safety, public relations, labor relations, and other services.

Employment . . . One of the responsibilities of industrial relations is to provide workers for the work force. Recruiting is finding qualified people for jobs and then selecting those who will work for the company and do the best job in the position.

There are many sources of potential employees. Some company representatives visit trade schools, technical schools, and colleges to recruit workers. The job may be posted within the company to attract applicants, and it can be advertised in the newspapers or trade magazines to attract people outside the company.

People who seek a job position must fill out a job application. This gives the company information as to the applicant's name, address, education, employment history, military service, hobbies, and references. A personal interview is often done to reveal the applicant's personality, attitude, and ability to handle the job responsibility. The interview also provides the opportunity for the applicant to reveal his or her own desires toward employment.

Performance tests are often given to the applicant. This is one method for matching the person to the job.

Training . . . . After a person is hired for a job, he or she usually goes through some type of training to learn the job. The amount of training depends on the type of job and the background work experience of the employee.

Some types of training are on the job where the employee learns by doing the job under supervision. Another type is classroom training that takes place in a separate room with a group of people and a teacher. The final type is special high-skill training for technical jobs called apprentice training or apprenticeship. To be trained for a special skill, years of classroom instruction and job experience training are required.

The development of this material is the result of a cooperative effort between the Bureau of Vocational Education and the Office of Research and Planning, Kentucky Department of Education. The Kentucky Department of Education does not discriminate on the basis of race, color, national origin, age, religion, marital status, sex or handicap. This publication was printed with state funds.

INSTRUCTION SHEET 1, (page 2)

Wages and Salaries . . . There are two ways for a company to pay its employees. Wages are paid to employees who work by the hour. Hourly employees usually work a 40-hour week. If they work for more than 40 hours, they usually are paid 1½ times the normal hourly rate for each "overtime" hour.

Many employees, such as managers, department heads, and supervisors, are paid salaries. A salary is paid without regard to the number of hours spent on the job. Many times these employees work more than 40 hours a week, but they do not receive any pay for overtime hours. This salary is usually based on the period of one week or one month.

Benefits and Services . . . . In addition to wages or salaries, most companies offer benefits. These are sometimes called fringe benefits. These benefits usually include insurance, vacations, and retirement plans, all financial in nature. Services are usually social, recreational, or other fun activities. They can include sports programs, parties, dances, club activities and health services. The cost for these services may be paid totally by the company or a small cost may be paid by the employee.

Safety . . . . . Another function of industrial relations personnel is to oversee company safety. People have to work hard to keep equipment and working conditions safe. Employees should be taught safe working habits and be aware of hazardous or dangerous conditions.

Accidents cost a company money. When an employee is injured on the job, the company often pays for the person's medical and hospital expenses. If an injured employee is not able to work, the company usually pays the person his or her wages. Accidents raise the cost of the company's compensation insurance. Production time is lost when there is an accident. Tools and equipment may also be damaged and have to be repaired or replaced.

Public Relations . . . Public relations workers do many things to create a good relationship between the company and the community. They keep the public aware of the ways the company supports

INSTRUCTION SHEET 1, (page 3)

the community by publishing booklets, pamphlets, and news stories in the local newspaper that tell about the good things the company is doing. Often a company will sponsor activities such as J.A.--Junior Achievement--and donate money to support funds for community activities.

Good public relations gives a company good workers, because it makes people want to work for the company.

Labor Relations . . . A labor union is an organization of workers that tries to solve or avoid problems between employees and management. Many workers belong to a union that represents them. The main purpose of a union is to negotiate a contract with management--called collective bargaining. It is a process of compromise--give and take.

INSTRUCTOR'S FINAL CHECKLIST

EXPLAINING FUNCTIONS OF INDUSTRIAL RELATIONS PERSONNEL

Accomplished	Not Accomplished

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

The student completed the test with 90% accuracy ..... [ ] [ ]